# *Advancing* *the* **digital** STATE

THE 1999
WASHINGTON
STATE
INFORMATION
TECHNOLOGY
PERFORMANCE
REPORT

The Honorable Gary Locke
Governor

*Washington State Department of*
**Information Services**

STATE OF WASHINGTON
*Winner*
'97 & '98
THE DIGITAL STATE AWARD

# Executive Summary

## The Digital State in Service to the Citizen

Public service is running on Internet time, increasingly making information and government services available when and where they are needed. This transformation of public service mirrors the rise of the "experience economy," which is characterized not just by the exchange of goods and services but also by the value, measured in psychological, emotional, or financial terms, of the experience. The experience economy is playing itself out in real-time on the Internet. Witness the exponential growth in the level of economic activity now being conducted online - the purchase of everything from books and music, stocks and insurance to automobiles and airline tickets, homes and mortgages.

This new experience economy is also dramatically resetting citizens' expectations for doing business with their government. To keep pace with those expectations, Washington continues to carefully develop a shared public information technology (IT) infrastructure that is both powerful and nimble enough to meet changing public expectations and service needs.

The speed of change is possibly best reflected in the changing face of government. Citizens reasonably expect access to and response from government entities. For decades, that access was limited to counter service at state agency offices, through the mail, and on the phone. By the mid-1990s, Washington began to shift toward digital delivery of government information to communities across the state through a pioneering kiosk program. These kiosks were an effective and appropriate means for government to provide a single electronic face at a time before the Internet became widely available and used. As technologies improved, as Internet use rose exponentially month to month, and as Internet presence became nearly ubiquitous, agencies worked on a web-enabled vision of public service.

As the Internet and its visual interface, the World Wide Web, caught the public imagination, the state's namesake website - www.wa.gov - emerged as a workhorse of public service, fielding over 5 million page views per month by mid-1998. The current website, *Access Washington* - an umbrella term for the thematic organization and presentation of formerly discrete agency websites - now serves up some 22 million page views per month. Terabytes of online public data are being enhanced through the growing number of transactional features on *Access Washington*. With these transactional capabilities, citizens and businesses can act on information by conducting real and secure business with government.

We have been witnesses to history on the run. In four short years, the focus of service delivery has shifted from government offices to community kiosks to direct connection via Internet access from schools, libraries, businesses, and, ultimately, the homes of citizens. This evolving model gives citizens the access and responsiveness to which they are entitled, at times and places chosen by them, not by the government.

This single face of government is made possible through an unseen but revolutionary initiative—the network. Through careful planning and development, the statewide IT infrastructure is able to accommodate constantly changing demands to deliver services and conduct the work of the government in new ways. The Intergovernmental Network, or IGN, connects state and local governments and allows them to exchange information and services with each other. The first users of this new network are members of the public health and criminal justice communities

[1] *The INPHO initiative, which gave rise to the IGN, was recognized by the National Association of State Information Resource Executives (NASIRE) in 1998 for outstanding achievement in intergovernmental applications in information technology.*

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under the auspices of, respectively, the Information Network for Public Health Officials (INPHO)[1] and the Justice Information Network (JIN). The public expects the work of these communities to be accurate and complete regardless of the fact that the responsibilities for these issues are divided between state and local entities. The IGN provides the technical backbone, out of the public eye, that allows for the caliber of work that the public rightfully expects. And the award-winning IGN shares much of the same infrastructure as the pioneering K-20 Educational Telecommunications Network.

The scope and speed of change in the information technology world are at once exciting and daunting. IT has almost limitless potential to improve services and service delivery, increase productivity, and enhance access to government information, but it must be thoughtfully and carefully implemented to make sure that it performs as needed, for a fair and reasonable cost. Accord-

ingly, multiple entities are involved in the state's information technology acquisition process. The Information Services Board (ISB) sets policies that ensure coordination and responsible stewardship of all the state's IT resources; the Department of Information Services (DIS) is a service provider and also an overseer of statewide IT resources and projects; and agency directors are charged with managing the IT resources of their respective agencies. Together, everyone makes sure that the best available IT serves Washington citizens.

As a result of these coordinated efforts, Washington won the Digital State award for two years in a row - in fact, Washington is the only recipient of the two year old award. The Digital State award, based on a review of all 50 states by the Progress and Freedom Foundation, evaluates the use of technology by state government in eight areas: digital democracy, higher education, K-12, business regulations, revenue and taxation, social services, law enforcement, and the courts, as well as "other initiatives."
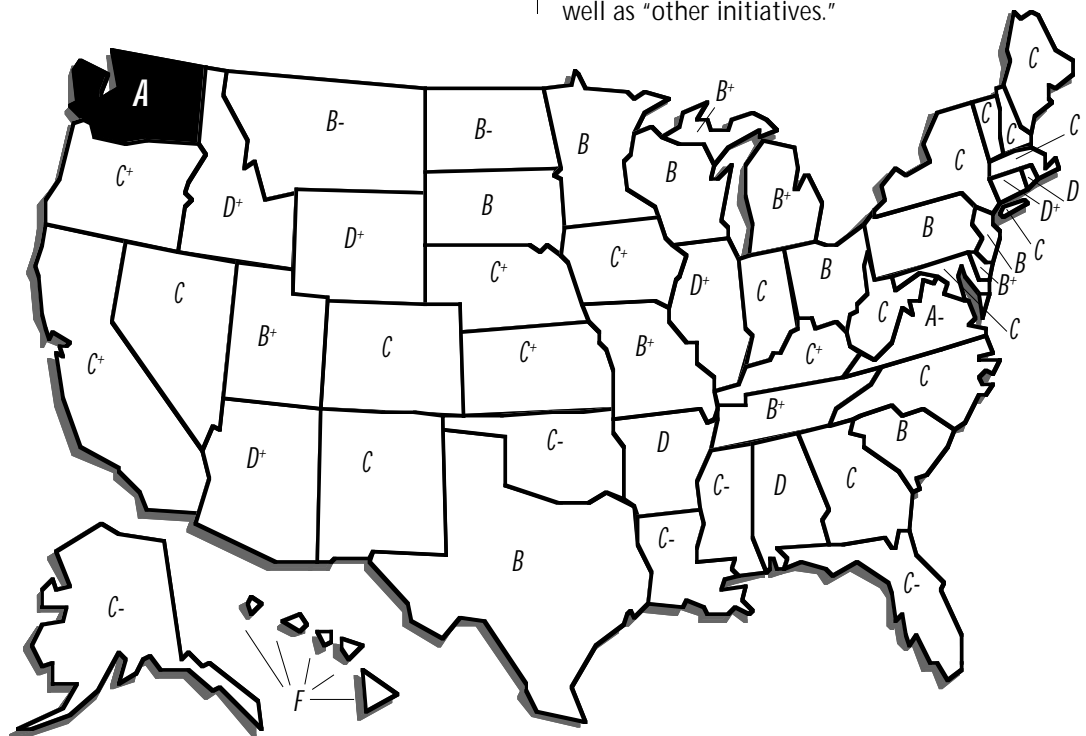


*Washington was the only state to receive an A for its management of information technology.*
*Source: "Grading the States: A 50-State Report Card on Government Performance," Governing Magazine, February 1999.*

Washington's hard work to make IT an essential part of governing was further validated by a third national study in early 1999. The Government Performance Project is a joint initiative of the Maxwell School of Citizenship and Public Affairs at Syracuse University, the Pew Charitable Trusts, and *Governing* magazine. The project stated that Washington is an innovator in its use and management of IT and gave it the only "A" in the IT category on its 50-state report card.

DIS is proud to deliver this report, which was developed around the statutory direction to provide:

- An evaluation of performance relating to information technology;

- An assessment of progress made toward implementing the state strategic information technology plan;

- An analysis of the success or failure, feasibility, progress, costs, and timeliness of implementation of technology projects;

- Identification of benefits, cost avoidance, and cost savings generated by major information technology projects under RCW 43.105.190; and

- An inventory of state information services, equipment, and proprietary software.

This report also assesses performance against the state strategic information technology plan that was updated in October 1996. The updated plan builds upon its 1993 predecessor and retains the 1993 plan's four goals for information technology in state government.

- Service delivery to the public has been improved.

- Information has been made more accessible through an affordable, shared, and widely available information technology infrastructure.

- Information technology is being used to respond quickly to changing business requirements.

- Investments in people, tools, methods, and partnerships are improving the knowledge and skills of the human resources within the information technology community.



*Governor Locke recognizes DIS staff for their leadership in the use of technology to serve the citizens of Washington.*

## A Unique Moment for Information Technology

The closing years of the 20th century have been characterized by a multifaceted shift in the role of information technology in society. After decades as a government protectorate, the commodity Internet has emerged as an economic engine in its own right, delivering on the promise of a ubiquitous open network. Not since the Gutenberg printing press has a communication technology so captured the public imagination or been imbued with such transformational potential. Companies with monikers ending in dot-com (.com) have become household names. Similarly, Washingtonians are increasingly requesting and receiving government information and services from a public service portal called wa-dot-gov (wa.gov).

The potential of the Internet and other digital technologies has been tempered by the need to address the Year 2000 date field issue, currently the most pressing management issue in both the public and private sectors. Washington's comprehensive and disciplined approach focuses on maintaining public accountability and uninterrupted provision of key government services. Agencies have properly reallocated resources originally earmarked for pursuing new IT initiatives to prepare for the Year 2000.

Coincident with the industry-wide effects of the Internet and Year 2000 mitigation, there has been a purposeful shift in the way the state manages its IT resources. Following a legislative directive to treat IT spending as an investment, DIS developed the portfolio management framework at the direction of the ISB and in consultation with the Customer Advisory Board to produce a higher rate of success for agencies' individual projects.

Under this new approach, agencies justify proposed projects on the basis of a sound business case and in the context of their relationships to existing IT infrastructure. This portfolio approach led *Governing* magazine to describe Washington as an "innovator" in the area of IT planning - a "rare" characteristic among states.

By the end of the 1997-1999 biennium, agencies representing 94 percent of IT spending in the executive branch and those headed by independently elected officials are expected to have developed their baseline portfolios. The development process has spurred unprecedented dialogue among agency IT organizations, business units, and executives about specific technology issues.

The first iteration of portfolios does not include a detailed set of performance measures. Instead, the effort has to date focused on clearly demonstrating the relationship between IT and agencies' business drivers so that in subsequent biennia technology's role in meeting the agencies' larger goals can be assessed. *Governing* magazine has devoted considerable attention to the relationship between technology and the process of governing. Jonathan Walters, the author of a recent book on performance measures,[2] contends that "there are some agencies, departments and initiatives that simply aren't suited to performance measure and never will be, barring development of some magical computer application that tracks the untrackable or establishes cause and effect when none seem to exist. It remains to be seen whether technology is one of those unmeasurables."[3]

*Governing* also suggests that the choice of indicators and what they are intended to measure represent one of the most difficult tasks put to public policy makers as they attempt to reconcile the links among technology, business drivers, and the qualitative nature of performance measures. "Is it enough to count boxes? How much staff time should be allocated? Is it even necessary to prove that computers belong in a classroom, in a squad car or on a civil servant's desktop? Performance measurements won't ever take the place of common sense. Nor will they address many qualitative issues surrounding the value of IT in achieving a particular public

purpose. But as a means of bringing greater accountability into government's sprawling technology infrastructure, there is little doubt that many of the questions raised by the performance measurement process are well worth asking."[4]

*Governing*, together with its partners at Syracuse University and the Pew Charitable Trusts, has asked those questions as part of the Government Performance Project. Their answer is that Washington leads the nation in IT use and management, a conclusion that confirms the judgment of the Progress and Freedom Foundation in its choice of the "Digital State."

Marshall McLuhan, whose ideas about the relationship between technology and society have endured through generations, once cautioned that one should not ask a fish about water because it knew of nothing else. The advantage of national assessments such as the Government Performance Project and the Digital State award is that they provide objective, third-party evaluations that would be difficult if not impossible to replicate through even the most disciplined set of internal performance measures.

This performance report comes at a time of transition. The statistics documented in the following pages represent data from the old planning process while at the same time foreshadowing some of the priorities of portfolio management.[5] The reporting requirements for agencies' IT performance reports are being refined in consultation with the public sector IT community.

Although available data do not lend themselves to rigorous statistical comparison, Washington's progress toward meeting its strategic IT goals has been richly documented. This report will detail how:

- Service delivery to the public has been improved through online initiatives such as *Access Washington*, *Find-It! Washington*, and a growing number of citizen-focused agency websites; the expansion of TVW current affairs programming on the air and on the web;

the use of electronic forms for electronic bids and for tax filing and payment; and on-demand access to criminal justice information.

- Information has been made more accessible through an affordable, robust, shared, statewide infrastructure on which a number of sector-specific logical networks ride— education (K-20), health (INPHO), criminal justice (JIN), and state-local data exchange (IGN). Taken together, these have emerged as a vital public asset.

- Information technology is being used to respond quickly to changing business requirements. The Internet has proven a powerful tool in creating quick responses to changing needs. Agencies are making many of their most requested forms available for downloading (Department of Licensing, Department of Health); others are providing interactive web-enabled forms (Washington State Liquor Control Board, Office of Insurance Commissioner); and still others are providing unprecedented direct access to mainframe applications (Department of Labor and Industries).

- Investments in people, tools, methods, and partnerships are improving the knowledge and skills of the human resources within the information technology community. Each year, approximately 4,000 public employees take courses to become more proficient users of agency IT resources. Another 1,000 employees have taken both end user and advanced IT training through computer-based training. In partnership with the University of Washington, an intensive project management program has been offered to public sector IT professionals in each of the last two years.

## Reflections on "Becoming Digital"

The previous performance report, "Becoming Digital," addressed a number of areas that would

[4] *Ibid.*

[5] *Over 90 percent of the 46 agencies surveyed for this report, representing the executive branch, independently elected officials, and the K-12, college, and university systems, submitted technology inventories and financial data for this report. The responding agencies are listed in the appendix. The response rate is double what it was two years ago and thus produced a more representative view of the total state IT infrastructure. This high response rate is partially due to streamlined reporting requirements and also the ability to submit information via e-mail on web-based forms. It should be noted that agencies estimated some of the information they submitted and that not all agencies responded to every question, which resulted in varying sample sizes across information categories. It is also worth noting that the agency survey took place during a comprehensive review and restructuring of IT management in state government. The data reported here are, by their nature, transitional and lack the precision expected in future reporting cycles when portfolio-based management will be fully implemented.*

require continued vigilance to ensure proper stewardship of public resources. It is useful to revisit those issues as a precursor to developing a comprehensive view of the current IT landscape.

The Federal Telecommunications Act of 1996 had just been signed when "Becoming Digital" was published. It promised to foster competition among telecommunications providers. In the intervening years, there has been explosive growth in industry mergers and acquisitions and uneven deployment of advanced telecommunications services, the latter being contingent largely on the old barrier of distance from a major metropolitan area. The effort to work through the details of continuing the expansion of advanced infrastructure while protecting consumer interests has moved to state legislatures - witness the plethora of telecommunications bills introduced in the 1999 legislative session.

Washington benefited from the federal Universal Service Fund established under the 1996 Act. The subsidy program for schools and libraries has, however, proven complicated and burdensome to applicants and has, in some instances, frustrated the state's efforts to coordinate IT purchases and realize maximum economies of scale.

The education sector is, in fact, now being served by the K-20 Network, which was only in the planning stage when the last performance report was issued. As detailed below, phase 1 is now complete and work is well underway for phase 2. When fully deployed, 424 educational sites - schools, colleges, and universities — will be connected to a high speed statewide backbone network.

"Becoming Digital" correctly suggested that there would be a growing demand on infrastructure. This report documents the significant efforts since then to refurbish and enhance the state's computing and network infrastructure, all done with a view to responding effectively to changing service delivery needs.

The earlier report anticipated considerable activity in the areas of public access to government records. Indeed, as documented below, *Access Washington*, TVW, and *Find-It! Washington* have radically reshaped the face of public access. They are enjoying exponential growth in use on the Internet and, in the case of TVW, cable television. Commercial access remains a complex and important issue, one that is exacerbated by the impact of the Internet and changing public expectations about service delivery and privacy.

In its Internet forecast, "Becoming Digital" suggested the "emerging web culture demands fresh information" and lends itself to efficient, timely and cost-effective service delivery. As detailed below, the report's predictions have proven conservative in retrospect. The Internet is changing the way business does business and how governments govern. Coupled with digital signatures, an important but still nascent framework for the authentication of electronic transactions, the web is becoming the metaphor for digital governance.

Finally, the earlier report indicated the need to be attentive of the management of IT resources. Indeed, the report's concerns about more effective quality assurance on IT projects were addressed as part of a comprehensive restructuring of the state's management approach to technology investments - that is, to see them as a portfolio.

The 1996 report also indicated work had already begun to address the now familiar concern over the Year 2000 date field problem. Through this state's comprehensive triage and remediation effort, Washington ranks among the top ten states in Y2K readiness on the eve of 2000.

The efforts described in this update are detailed in the body of the report that follows. Like its predecessor, this report will conclude with a periscope view of issues for the coming biennium.

# Statewide Survey

## The Information Technology Landscape
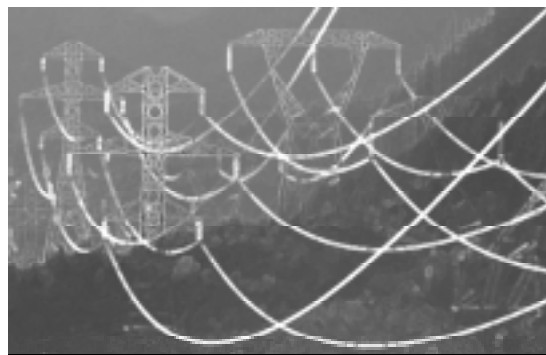


### A Shared Infrastructure as a Vital Public Resource

State government's use of telecommunications to help serve and protect citizens reached a new level in 1997 as Washington's innovative Intergovernmental Network came of age. The Intergovernmental Network (or the "IGN") currently reaches 37 of the state's 39 counties and improves connectivity between state agencies and their local government counterparts.

The near ubiquity of the IGN is the key to its utility as a new tool for serving Washington citizens. The notion of network utility was captured by 3Com founder Robert Metcalfe in a formula named for him. Metcalfe's Law holds that new technologies are "only as useful as the number of people that use them." In the case of a network, "The more people who use [it], the more valuable it becomes, and the more new users it will attract, increasing both its utility and the speed of its adoption by still more users."[6]

The Internet provides overwhelming proof of Metcalfe's Law. Similarly, the IGN, which connects seamlessly to the Internet, is demonstrating its growing utility. Today, the IGN underpins a number of public services that represent only a fraction of its potential value:

- A public health system based on the landmark Information Network for Public Health Officials (INPHO);

- A law and justice system through the Justice Information Network (JIN); and

- Other public access initiatives.

The IGN resides on the state's digital backbone network, the "central nervous system" of Washington's telecommunications infrastructure. In the mid-1990s, DIS began to establish telecommunications points of presence in all but two counties when the federal Centers for Disease Control and Prevention awarded the state Department of Health a grant to develop a model Information Network for Public Health Officials.

DIS used this public health network project as the foundation of the IGN. In mid-1997, Washington became the first state to complete its public health network, which in turn became the first application on the IGN. In the course of connecting the Department of Health and the 34 local health jurisdictions serving the 39 counties, DIS created sharable connections that could serve other state and local government needs, including offering access to justice information through the JIN.

The IGN is an initiative in Governor Locke's quality improvement program. DIS measures its progress and success by the number of organizations connected to, the number of applications supported by, and the number of individuals who use it. As its use increases, the IGN will:

- Improve network management and operations with a standards-based, shared network infrastructure;

- Enable local governments to save money by consolidating network connections to the state through the IGN;

- Improve productivity by reducing the time and effort needed to share information between state and local governments;

- Improve local government interaction through online business transactions and in-

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[6] *Larry Downes and Chunka Mui, Unleashing the Killer App: Digital Strategies for Market Dominance, Boston: Harvard Business School Press, 1998: pp. 18-19.*

formation sharing within regions and interest groups; and

- Improve direct services by increasing public access.

During the IGN's second phase, now underway, proof-of-concept projects are verifying that authorized local government departments can access applications residing within the state's intranet. For example, the Office of the Administrator for the Courts used a proof-of-concept project to establish connectivity through the IGN to serve courts located within local county network environments.

The IGN's value as a public asset grows in direct proportion to the quantity and types of users. The sector-by-sector expansion, beginning with public health and adding justice applications, provides a model for network growth that will eventually include other public purposes.

## All that Connects to the Network

The continuing enhancements made to the state's IT infrastructure in the closing biennia of the millenium have made Washington the leader among state governments in the use of IT. By focusing on a shared, non-duplicative infrastructure, the state has continuously strengthened the infrastructure without increasing spending levels. Agencies reported a total of over $1 billion in IT spending during the 1995-1997 biennium, approximately the same level as the previous biennium, on the full range of hardware, software, services, staff, and related licenses and maintenance agreements. Of that amount, over $515 million went directly into computing and network infrastructure. In the 1997-1999 biennium, agencies project that these direct IT expenditures will drop while the overall level of IT investment will rise. The primary drivers for this overall increase will be personnel costs and a greater reliance on outside services purchased from the commercial sector.

As Figure 1 illustrates, ten agencies are responsible for 80 percent of the statewide IT spending. During the previous biennium, the top ten agencies spent approximately 83 percent of the statewide IT dollars, a difference that may be due to having a larger agency sample for this reporting period. Although there is some biennium-to-biennium variation in the makeup of the top tier, the top ten agencies have consistently been responsible for over 80 percent of IT spending for the last three biennia (1993-1999).

Agencies report that on average 99 percent of agency personnel who require a computer to do their jobs have PC access. Of course, there are significant numbers of full-time equivalent (FTE) state employees who do not need a PC at work, and they are not included in the average.

The 99 percent statistic may be inflated by two factors. First, equipment inventory databases are often unable to distinguish between desktop PCs and servers, and machines shared within and among agencies, and thus provide an inaccurate number of PCs. And second, many agencies provide PCs for temporary employees and contractors in addition to machines dedicated to public or shared access, again making for an inaccurate accounting of the number of PCs dedicated to FTEs.

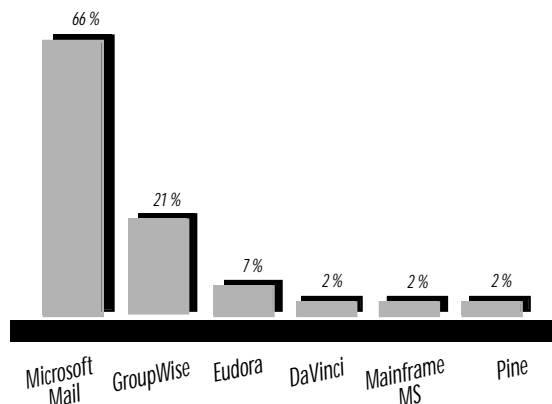### Top Ten Agencies as a Percentage of Total IT Spending



All Others
20%

Top Ten
80%
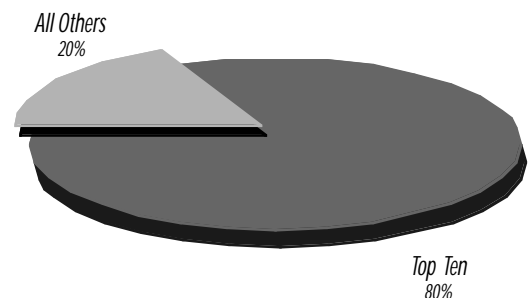
**Figure 1**

### Penetration of TCP/IP in Install Base

PC's with other Protocol
6 %

PC's with TCP/IP
94 %
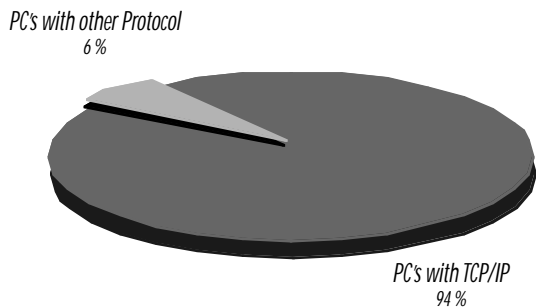
**Figure 2**

## Network & Software Tools

The computing and network environment has changed dramatically, thanks largely to the promulgation of industry standards. Adherence to the statewide communications standard, Telecommunication Communications Protocol/Internet Protocol (TCP/IP), now stands at 94 percent, up from 59 and 38 percent, respectively, in the previous two biennia (see Figure 2). The effect of this development is striking: Agencies report that on average 86 percent of FTEs with PCs are able to get to the Internet. Additionally, 29 of 46 reporting agencies say they are 100 percent TCP/IP compliant, and 25 agencies also report that all of their employees have Internet access. That said, agencies are mindful that network use must further their public missions. With the guidance of the Executive Ethics Board and the Governor's office, agencies have developed policies and procedures for the appropriate use of network resources, and some use tools such as proxy servers to limit network use to ways that are consistent with their internal policies.
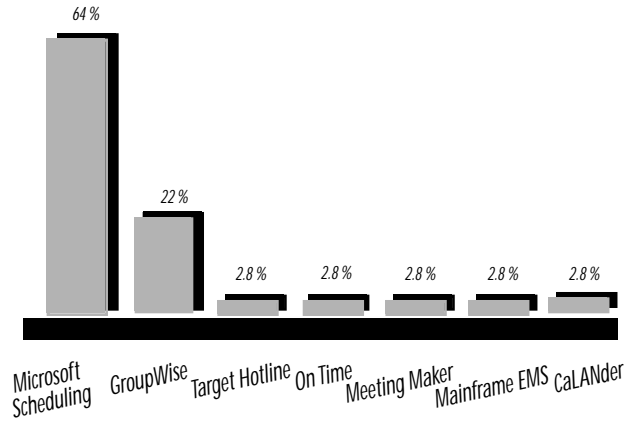
In addition to formal standards, extensive use of a product can create a de facto standard. 66 percent of agencies use Microsoft products for e-mail and networking, 64 percent use Microsoft products for scheduling, 83 percent use Microsoft products for word processing, 88 percent use Microsoft products for spreadsheets, and 93 percent use Microsoft presentation software (see Figures 3 through 7). This near-universal use of Microsoft products may be partially due to the trend toward marketing "suites" of software, bundles of discrete products that are discounted when purchased together. Microsoft's Office 97, for example, combines e-mail, scheduling, word processing, spreadsheets, and presentation software, and is the most commercially successful desktop suite.

Many agencies have a mix of Novell and Windows network operating systems but overall, agency use of the Novell network platform has decreased by 28 percent since the last report.

### Primary Electronic Mail Software by Percentage of Agencies

66 %  
21 %  
7 %  
2 %  
2 %  
2 %  

Microsoft Mail · GroupWise · Eudora · DaVinci · Mainframe MS · Pine

**Figure 3**

## Primary Calendar/Scheduling Software By Percentage of Agencies

64 % — Microsoft Scheduling
22 % — GroupWise
2.8 % — Target Hotline
2.8 % — On Time
2.8 % — Meeting Maker
2.8 % — Mainframe EMS
2.8 % — CaLANder

**Figure 4**

## Primary Word Processing Software by Percentage of Agencies

83 % — WORD
17 % — WordPerfect
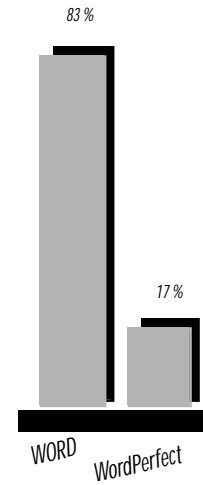
**Figure 5**

## Primary Spreadsheet Software by Percentage of Agencies

88 % — MS Excel
10 % — Quattro
2 % — Lotus 123
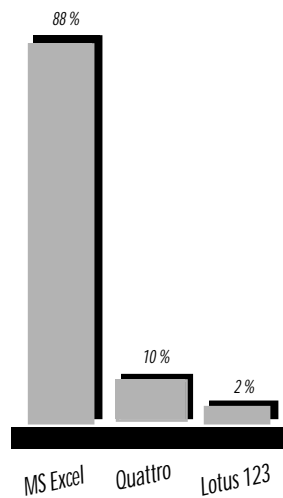
**Figure 6**

## Primary Presentation Software by Percentage of Agencies

93 % — Microsoft PowerPoint
5 % — Presentations
2 % — Freelance

**Figure 7**

## Profile of Desktop PCs by Processor Type



Pentium II
12%

486
24%

386 or below
6%

Other
8%

586 / Pentium
50%
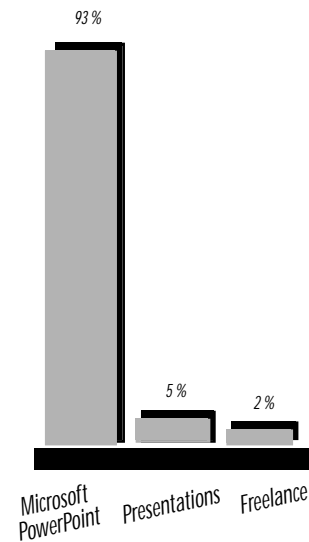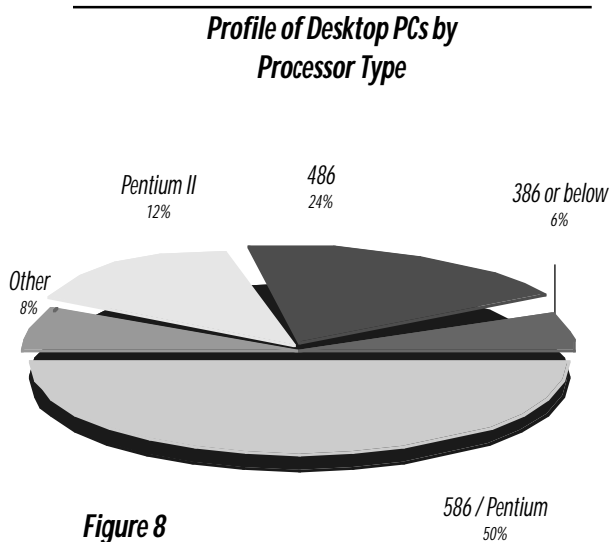
**Figure 8**

The use of e-mail within state government has become universal. Moves toward common e-mail software and the use of the Internet helped resolve former interoperability issues. Agencies and other public entities have consolidated around the centralized DIS e-mail hub, and now nearly every state agency uses the statewide network backbone to exchange e-mail between state offices and the Internet.

Of the 34 percent of state agencies that do not use Microsoft e-mail and scheduling products, one fifth use Novell's e-mail and scheduling products, Groupwise. The remaining 13 percent use other specialized software for e-mail and scheduling services (see Figures 3 and 4).

83 percent of state agencies use Microsoft Word, up 14 percent from the last reporting period (see Figure 5).

88 percent of agencies use Microsoft Excel as their main spreadsheet software tool, a 23 percent increase since the previous reporting period (see Figure 6).

Presentation software preferences were not previously tallied, but Microsoft PowerPoint, at 93 percent, is the overwhelming choice in state government (see Figure 7).
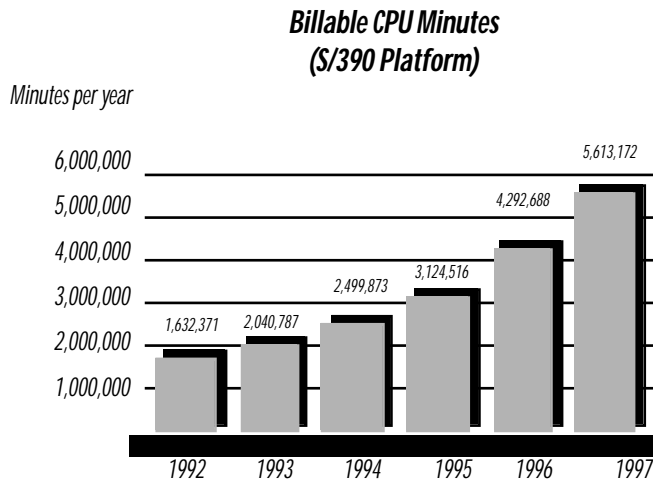
## Computing Hardware

Desktop computing in state government continues to change as ever more powerful processors are introduced. In 1995, 386-class machines were state-of-the-art and sat on more than half of all desktops. Today, they comprise only six percent of all PCs in government service. Instead, 586-class Pentium-based machines dominate state desktops. These processors are capable of handling the resource-intensive software and media-rich files that have been adapted or developed in support of providing government services. The "Other" category, shown in Figure 8, is comprised primarily of Apple-brand Macintosh machines. Intel-based architectures are the mainstay of desktop computing in state government.

It is worth noting that the machines in the "Other," 386, and 486 categories comprise 38 percent of desktop PCs and may be incapable of supporting advanced software features or 32-bit operating and application systems.

Reflecting a massive upgrade, PC-related spending for the 1995-1997 biennium was over $131 million,[7] which represents more than 25 percent of direct IT expenditures for that period. Agencies anticipate PC outlays to remain consistent during the 1997-1999 biennium, and there is a trend toward implementing regular PC replacement schedules. A seven-fold increase in the amount spent on PC leases is also forecast. For the 1995-1997 biennium, the average cost to equip one FTE with necessary tools and support, including telephones, PCs, connectivity, software, and technical assistance, was approximately $5,100. Agencies report that this cost may drop

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[7] *Some agencies were unable to report discrete PC spending and instead included it in the hardware purchases category.*

## Billable CPU Minutes
### (S/390 Platform)

*Minutes per year*



6,000,000 — 5,613,172

5,000,000 — 4,292,688

4,000,000 —

3,000,000 — 2,499,873  3,124,516

2,000,000 — 1,632,371  2,040,787

1,000,000 —

1992   1993   1994   1995   1996   1997

**Figure 9**

## Annual Production Transactions
### (Unisys Platform)

*Transactions per year*



250,000,000 — 225,564,366

200,000,000 — 172,503,232  203,342,062   220,173,041

150,000,000 — 152,721,820  157,382,930

100,000,000 —

50,000,000 —

1992   1993   1994   1995   1996   1997

**Figure 10**

*Year 2000 Readiness Disclosure*

more than $200 per FTE in the 1997-1999 biennium due to lower hardware and network costs.

And beyond desktops lie other mission-critical computing tiers, the servers and mainframes crucial to the delivery of state services. There are five fewer data centers in state government today than a decade ago. As a result, the ratio of

[8] US West Communications and the Boeing Company operate the two larger centers.

workload to revenue dollar rose 613 percent in the last five years. State government computing is consolidated at two primary data centers, one at DIS and the other at the Department of Transportation. The Washington State Patrol recently moved its mainframe processing to DIS.

DIS operates the third largest data center in the Pacific Northwest[8] and in it combines both client server and mainframe computing in a secure, controlled environment. When setting up and operating its data center, DIS anticipated the trend toward continued mainframe consolidation as well as additional workload resulting from Year 2000 mitigation. Since 1990, the production processing capacity on the Unisys platform has increased by over 240 percent while the IBM production platform has grown by more than 450 percent. This steep growth in computing capacity has taken place as the state augmented its mainframe systems to keep pace with increased agency demand. As the bar graph in Figure 9 shows, from 1992 to 1997 the IBM System 390 computing platform experienced a three-fold increase in the amount of CPU time billed to agency consumers.

The Unisys platform at DIS also saw increased agency use. Though this platform employs different metrics for measuring system usage, growth is evidenced by several statistics. A key indicator is the number of online production processes (or "transactions," in Unisys parlance) shown in Figure 10.

By the end of 1997, the IBM System 390 computing platform had the capacity to process 350 million instructions per second. The DIS data center also had enough capacity to store over 2.5 trillion characters of online data. In spring 1998, the System 390/Year 2000 Compliance Environment

was made available to agencies to test and certify their critical applications with true future system dates. Also in 1998, the Unisys 2200 mainframe was upgraded with the first of two machine replacements. The new Unisys environment represents exciting new advancements, where familiar enterprise system capabilities are integrated with Microsoft NT technology within the same mainframe server. This gives agencies the opportunity to continue running their proven business applications while enabling web access to those same applications. It also offers the capability to reengineer critical workloads toward more "open" systems as time permits.

A number of other agencies and public institutions house their computer applications in their own mainframe data centers. Some of the larger operations include the Office of the Administrator for the Courts, the Legislative Service Center, and data centers located in major universities and colleges. Smaller data centers, many operating on Tandem or PRIME computing platforms, are found at the departments of Employment Security, Revenue, Personnel, and in the Office of the State Treasurer.

Meanwhile, agencies continued to migrate an increasing number of mid-size processors and servers to shared floor space at DIS. These client server systems encompass a cross-section of computing industry vendors, with hardware from Sun, DEC, HP, Compaq, IBM, and others, along with an equally diverse array of system software products.

## IT Projects Subject to Oversight

Washington's record for completing large IT projects on time and on budget, and with all the stipulated features and functions, runs 36 percent higher than the national average for both the public and private sectors. During the 1995-1997 biennium, DIS monitored completion of 16 large IT projects worth over $164 million.

Lessons learned in previous biennia have translated into better performance on major IT projects. For example, most new projects are now scaled for completion within a single biennium. As a result, more new projects are successful, fewer projects are challenged, and fewer still need to be carried forward into the next biennium. Washington's 92 percent success rate far exceeds the industry average for large technology projects completed within original budget and schedule estimates.[9] Still, DIS is committed to improving this success record.

| Biennium Years | 1993-95 | 1995-97 | 1997-99 |
|---|---|---|---|
| # of Projects Under Oversight | 19 | 16 | 15 |
| # of Projects Completed (completed mostly on time/on budget) | 7 (37%) | 12 (75%) | —— |
| # of Projects Challenged or Significantly Behind Schedule | 3 (16%) | 0 | —— |
| # of Projects Cancelled | 1 (5%) | 1 (6%) | —— |
| # of Projects Carried Forward to Next Biennium | 8 (42%) | 3 (19%) | —— |
| Success Rate (excluding projects carried forward) | 63.6% | 92% | —— |

*[9] M. Hotle, The Gartner Group, "Applications Development & Management Strategies," 12/27/96 SPA-650-1410 .*

Several major projects were completed during the 1995-1997 biennium and are already serving citizens. One of the most significant projects was the Automated Client Eligibility System (ACES), placed into production by the Department of Social and Health Services (DSHS) on schedule and within budget despite the project's enormous size and scope. As the largest and most complex system in the state, ACES supports 5,000 users in 90 locations across the state. It processes millions of transactions every day in support of the approximately 700,000 state citizens who receive some form of medical or financial assistance. It also distributes over $2 billion in annual benefits. Determining, calculating, authorizing, and tracking welfare eligibility involves an extremely complex set of business rules which is reflected in the over 12,000 application function points and 2 million lines of executable code. According to IBM Global Systems, this level of system complexity puts ACES in the top two percent of systems nationwide. Tangible project benefits are expected to result in full payback in 2000, approximately three years after statewide implementation and conversion are both completed. By 2001, the project is expected to yield an estimated $120 million in gross benefits to the state.

DSHS also completed both the ACES Transition (Bridge) Project and the Case and Management Information System (CAMIS). The Bridge project developed a flexible business model and the technology architecture to support key policy initiatives such as welfare reform. During its 18-month lifecycle, the project built a computerized welfare reform model and developed three working prototypes for extending the current ACES architecture, as well as a set of guidelines and strategies for future development of the application and its related architecture. CAMIS was initiated by DSHS in response to federally mandated upgrades to the state's child welfare system. CAMIS provided opportunities to replace aging software and hardware in regional field offices to address workflow alignment and improve access to information that supports decision making. By integrating CAMIS with ACES, DSHS is better positioned to respond to future policy changes. The Bridge project was completed both ahead of schedule and under budget. CAMIS was completed on schedule and within budget.

The Employer Accounting System Enhancement (EASE) project at the Department of Labor and Industries (L&I) improved the existing system with more reliable design and improved controls over receipts, payments, and collections of workers compensation funds. Although EASE is a medium-sized system in terms of functional complexity, it processes about $1 billion annually in cash collections from over 150,000 employers. EASE used a technique called "code inspections" in its quality assurance methodology, which proved to be valuable for creating a product with few defects. The project came in on schedule and well under budget. The feasibility study estimated the total tangible benefits of the project to be $9.453 million over a nine-year period.

The award-winning Information Network for Public Health Officials (INPHO) was launched by the Department of Health (DOH) to allow information sharing throughout the public health system. INPHO connects the state's 34 local health jurisdictions to a Wide Area Network and provides Internet access, e-mail services, and access to other public health information systems. This communications network, which came in ahead of schedule and under budget, is one of the cornerstones of Washington's IGN.

The Service Credit Notification (SCN) project at the Department of Retirement Systems (DRS) was a major component of a multi-year group of projects. SCN provides retirements eligibility information to state employees. Successful completion was due in part to DRS's use of clearly defined

system development requirements, which in turn provided consistency for the contractors who worked on the project. SCN was completed on time, with only a slight budget variance during the course of the biennium.

The Washington State Liquor Control Board (WSLCB) completed its Information Technology Project within the 1997-1999 biennium. This project improved the agency's computing and technical support infrastructure. Funding came from the WSLCB revolving fund; the project came in under budget.

The Department of Personnel's Human Resource Data Warehouse (HRDW) ranked eighth in InfoWorld magazine's "Top 100 Innovative Client/Server Projects" for the year of its introduction, 1997.[10] HRDW gives access to human resource information contained in the mainframe personnel/payroll system and also to consolidated general government and higher education human resource data. This information is used for management reporting and decision making purposes. The initial project was completed on time and under budget in June 1997. A follow-on enhancement project runs through the next biennium and will expand the type and amount of workforce information available, as well as provide ad-hoc agency access to the data.

The General Unemployment Insurance Development Effort (GUIDE), the client eligibility system at the Employment Security Department (ESD), is one of the state's last "mega-system" technology transfer projects and was carried forward into the 1997-1999 biennium. Its completion in fall 1998 puts Washington among the states that most quickly pays unemployment benefits. By the end of 1998, Washington sent out 97 percent of its unemployment benefits checks within 14 days of the one-week waiting period that follows an initial claim filing. For those just laid off from work and uncertain about how they will survive financially, timeliness is critical. This 97 percent rate far surpasses the federal standard of 87 percent and places ESD among the top performers in the nation. Although the project exceeded the proviso project budget, there was no financial impact to the state because the prime contractor assumed liability for all excess costs.

The completion of GUIDE left only two major IT projects to be carried forward into the 1997-1999 biennium. The Women, Infants and Children Client Information Management System (WIC/CIMS) project creates a client/server eligibility application to support DOH in providing health screening, nutrition education, food, and social health referrals to over 147,000 women, infants, and children at 300 sites across the state. This project will be developed in three phases over a four-year period. Phase 1 automates enrollment and eligibility requirements, client nutrition status assessments, prescribing of food packages, WIC check issuance and certification, and reinstatement and/or transfer of clients between clinics. Phases 2 and 3 support caseload management, compliance monitoring, nutrition reporting, outreach, tracking, evaluation, and fraud control. Funding is provided by the U.S. Department of Agriculture. Pilot testing for the first phase was completed in August 1998, and the clinic implementation program is under way. WIC/CIMS had been implemented at 23 clinics by the end of 1998, representing 15 percent of the caseload. Statewide implementation of the system is scheduled for completion September 1999.

The Washington State Patrol (WSP) operates the Washington State Identification System (WASIS), a 10 year old system that contains arrest, fingerprint, and final disposition data. Similarly, the Washington Crime Information Center (WACIC) is a 20 year old system containing information about crimes and criminals, missing persons, and stolen property. WASIS and WACIC are major components of the Justice Information Network, which coordinates multi-jurisdic-

[10]
http://www.infoworld.com/cgi-bin/displayStat.pl?pageone/news/features/iw100.profile-8.htm

tional projects involving state, county, and city law enforcement and court systems. This project combines and reengineers these two systems, WASIS and WACIC, to better reflect criminal justice business practices, to automate data collection, and to improve maintenance, reliability, and ease of use. Science Applications International Corporation (SAIC) will modify its criminal information system (CRIMEvue) to WSP's specifications for a single system that performs the functions of WASIS and WACIC. The project is funded with federal grants. System implementation is slated for October 1999.

Of the 13 new IT projects actively under way in the 1997-1999 biennium, three are managed by ESD. The Claims and Adjudication Call Centers will allow claimants to file for unemployment insurance benefits over the phone and eliminate the need for unemployed workers to visit a Job Service Center in person to establish a claim. This represents a major change to business processes and thus is highly visible to stakeholders. Project funding is provided by a special implementation grant of $784,890, a $703,000 allocation from the State Penalties and Interest Fund, and grants from federal unemployment insurance. Implementation of the Call Centers is scheduled for July 2000.

One-Stop career centers, also led by ESD, responds to a federally sponsored national initiative to change the way employment-related services are provided to job seekers and employers. Typically, job seekers and employers, the customers of the system, find services by traveling to several agencies at different locations. With the implementation of One-Stop, these customers will be able to get the services they need from a single career development center or at convenient affiliate or self-service sites. This project is an extremely large undertaking. The total implementation grant is $9.45 million over three years, beginning July 1, 1997, and ending June 30, 2000.

The budget for the first two years is approximately $6.6 million, which includes $4.6 million to local partnerships and $1.42 million to state workgroup activity. ESD is also developing the Document Entry Storage & Retrieval Project to replace an antiquated data entry and microfilm storage and retrieval system with a state of the art imaging and document storage system. This system will use a complete local area network-based imaging system with system software, LAN servers, imaging servers, document scanners, printers, and high-resolution video displays. ESD will employ Electronic Data Interchange for document transfer from large and medium sized employers. This project is funded by a $2.05 million appropriation from the Legislature and should be completed in September 1999.

DSHS has embarked on a federally mandated initiative to replace paper-based food stamps and limited cash assistance with Electronic Benefits Transfer (EBT). The EBT system will ensure Washington's continued eligibility to distribute federal food stamps, currently worth approximately $12 million per month, under the provisions of the Federal Welfare Reform Act, which requires states to implement an EBT program by 2002. DSHS is providing its EBT program under a contract competitively awarded to Citibank Corp., the result of a multi-state solicitation conducted by Colorado. The other participating states are Alaska, Arizona, Colorado, Hawaii, and Idaho. Membership in this alliance reduced costs for Washington while assuring that service delivery needs are met. The Washington program includes development of point-of-sale devices in public places where clients can pay bills or obtain cash against their grant benefits, thereby avoiding fee-based automated teller machines. The statewide implementation of EBT is slated for completion by November 1999.

The Commercial Vehicle Information System and Networks (CVISN) is being managed by the Department of Transportation (DOT). The CVISN pilot project represents Washington's participation in the Federal Highway Administration's Intelligent Transportation System/Commercial Vehicle Operations (CVO) plan. CVISN will supply the underlying technology architecture for CVO information systems and address standards and protocols for data exchange, communications with national CVO clearinghouses, and system modules for functions common to all states. The resulting system will be able to weigh vehicles while they are moving, clear those that meet state transportation standards, and check vehicle licenses and permits against state records. It will also allow private sector commercial vehicle owners to electronically purchase licenses and permits. This last feature will require electronic interface with legacy systems at the Department of Licensing, Washington State Patrol, and DOT. Final estimates for the cost of the pilot program and the total deployment cost of CVISN are being developed.

At the Department of Retirement Systems (DRS), a Receivables Management System (RMS) is being constructed to integrate accounts receivable, cash receipts, and associated general ledger accounting with corporate-level automated business systems and databases. RMS will interface not only with internal agency systems, but also with the Office of Financial Management's (OFM) Agency Financial Reporting System (AFRS). Funding for the project is from state appropriations. The system is expected to be online by June 1999.

Five other projects planned for the 1997-1999 biennium are in their early lifecycle stages. The most significant among them is the incremental rebuilding of the aging Offender-Based Tracking System (OBTS) at the Department of Corrections (DOC). OBTS is a 20 year old system originally designed to automate DOC's ledger book of offenders. It no longer adequately supports DOC-for example, it can take up to 16 hours to merge offender records and has difficulty supplying aggregated data and analyzing decision impacts. In the coming years, DOC will be required to manage an increasing and changing offender population. The revised OBTS will decrease the amount of time required to enter data, thereby increasing the amount of time available for supervising offenders. A complete overhaul of this magnitude will cover several biennia; DOC has planned the OBTS replacement in four phases.

DOC is also working on the statewide rollout of the Graphically Enhanced Network Information Enterprise (GENIE) project, an application that supports the work of community corrections officers. GENIE schedules offender visits, generates road maps to offenders' homes or work sites, provides links to drug labs to obtain drug analysis results, and notifies the officers of offender non-compliance. It also has multimedia reporting stations at which an offender can check in with community corrections officers by using hand biometrics as identification. GENIE receives offender information from OBTS.

At the Office of the State Treasurer (OST), the Treasury Management System (TMS) will replace the current legacy systems and applications. OST is taking a phased approach to the development effort, with each phase after the design phase providing measurable revenue benefits. The 1997-1999 biennial budget includes $450,000 for general system design, a feasibility study, and competitive solicitation. The 1997-1999 supplemental budget includes $815,000 for detailed design and prototype development. A 1999-2001 biennium budget request package was submitted for $1.697 million to fund development. The project is in a planning, or set-up stage, that includes a work plan update, business process analysis and redesign, and enterprise data model and architecture design development.

**IT PROJECTS UNDER OVERSIGHT DURING THE 1997 - 1999 BIENNIUM**

| Project Name | Agency | Project Budget for 1997-1999 Biennium |
|---|---|---|
| Call Centers | Employment Security Department | $8,529,673 |
| One-Stop Career Centers | Employment Security Department | $6,675,000 |
| Electronic Benefits Transfer | Department of Social & Health Services | $6,325,571 |
| Women, Infants and Children (WIC)/ Client Information Management System (CIMS) | Department of Health | $3,843,666 |
| WASIS / WACIC | Washington State Patrol | $3,762,995 |
| CVISN | Department of Transportation | $2,700,000 |
| Licensing and Enforcement Automation Project (LEAP) | Department of Health | $2,105,226 |
| Document Entry Storage and Retrieval Project (DESR) | Employment Security Department | $1,866,731 |
| Drinking Water Management Enhancement | Department of Health | $1,734,000 |
| Treasury Management System (TMS) | Office of the State Treasurer | $1,265,000 |
| Receivables Management System (RMS) | Department of Retirement Systems | $1,259,000 |
| IT Upgrade Project | Liquor Control Board | $1,250,000 |
| WILD | Department of Fish and Wildlife | $1,000,000 |
| Human Resource Data Warehouse 97 (HRDW) | Department of Personnel | $800,000 |
| OBTS | Department of Corrections | Budget Approval Pending |

DOH has received ISB approval for the the Licensing Enforcement Automation Project (LEAP), which will replace an aging system used to manage and process professional license applications, renewals, complaints, and disciplinary actions of the state's 356,000 health care professionals. LEAP involves the acquisition and customization of commercial software. Project costs will be covered through the DOH revolving fund. The baseline project assessment is expected to be underway by the time this report is issued.

DOH is also launching a Drinking Water Information Management Enhancement Project. The Drinking Water project will replace the current system and monitor contaminants in public and private drinking water across the state. DOH has determined that the current monitoring system can no longer provide the information needed to meet reporting requirements. The feasibility study set the project budget at $6.3 million. $1.7 million in initial federal funds has been identified to cover start-up activities, the feasibility study, beginning of work on the preferred option, all on-going system maintenance, and support costs during the 1997-1999 biennium. DOH anticipates additional federal funds to meet the total budget requirement.

The Department of Fish and Wildlife (DFW) received acquisition approval from the ISB for the Washington Interactive Licensing Database (WILD) project. In 1996, the Legislature directed DFW to simplify licensing rules and processes. The WILD project, an outgrowth of that directive, will be an automated point-of-sale system that uses an online database and "smart card" technology. A systems integrator will be sought for system construction and to assume financial responsibility for system maintenance.

One major project was cancelled during the reporting period. On March 13, 1997, the ISB exercised its authority under RCW 43.105.41(1)(b) to instruct the Department of Licensing (DOL) to terminate the License Application Migration Project (LAMP) and companion project activities. LAMP centered on the integration of discrete databases that would have combined driver records with vehicle and vessel registrations. By April 21, 1997, the effective date of the ISB's action, DOL had cancelled vendor contracts associated with LAMP and retained or archived all project documentation as required. DOL subsequently conducted a comprehensive technology assessment of how best to proceed in refurbishing its information technology infrastructure using a model based on a limited commitment and a phased approach.

The challenge in project oversight has been to move beyond the default position of crisis management - expending extraordinary effort to correct a faltering project - to a process of coordinating new projects as part of a larger IT portfolio. To meet this challenge, the ISB initiated a new framework in 1997 to reshape state government's stewardship of information technology as a vital public asset. Portfolio management, this new framework, is discussed in its own section later in this report.

## The People Behind The Scenes

Recruiting and retaining knowledge workers in IT is a continuing challenge to the public sector, particularly in light of the competition for scarce Year 2000 mitigation resources. That said, Washington enjoys considerable success in maintaining a talented and dedicated community of IT professionals whose work is consistently recognized for its innovation and quality.

Agencies plan to spend approximately $418 million on IT-related salaries and professional development for the 1997-1999 biennium.

On average, agencies invested $1,000 on professional development and training per IT FTE per biennium. The Department of Personnel (DOP) coordinates end-user IT training for state agencies

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and contracted with a local community college to provide regular instruction and computer lab facilities. Approximately 4,000 state employees participated in DOP end-user training programs in 1997.

DIS has made a range of computer-based training (CBT) courses available at no charge for end-users and advanced IT professionals in state agencies, commissions, and boards. The CBT programs allow state employees to learn at their own at pace, with minimal interruptions to work schedules. The DIS Customer Advisory Board selected courses on behalf of the public sector IT community in three primary areas: 1) desktop curriculum on leading applications, 2) technical education and certification curriculum, and 3) business and functional training on project life cycles. Just over 1,000 state employees have enrolled in CBT courses through DIS.

During the 1997-1999 biennium, DIS initiated a partnership with the Project Management Institute and the University of Washington to offer a Certificate in Project Management program in Olympia for public sector IT professionals who manage large software projects. 48 IT professionals from across state government have completed the UW project management program in the first two years it was offered - 21 in 1997 and 27 in 1998.

According to the META Group, an industry watcher, "With current IT turnover (or churn) rates between 11 percent and 20 percent, staffing is now one of the top three concerns for IT executives."[11] In state government, the turnover rate for IT personnel initially appears to be at the high end. With 31 agencies responding, the turnover rate averaged 22 percent. 13 of those agencies reported rates at or above 20 percent, while eight agencies could claim a rate of ten percent or less. However, organizations are frequently competing for the same skilled personnel, so it is unclear

how much of this churn occurs within state government versus staff leaving for other sectors. In looking ahead, 31 agencies examined the percentage of their information technology staff eligible for retirement by 2000 and found a ten percent overall average.

## Applying New Technology: Emerging Trends

The recent information technology survey asked agencies about their efforts and plans in several key technology areas, some of which are considered established and others that are only now finding wider market acceptance. These various undertakings are grouped according to technology category, and some agency initiatives integrate more than one of these emerging technologies within a single project.

### *Web-Enabled Reporting*

The ability to fill out and submit forms over the Internet or to dynamically generate reports from databases and other information sources can streamline customer service. Projects using web-based forms and reports are the hottest emerging trend in the survey.

Ten agencies have deployed a web-enabled application, with most designed to benefit external clients. Nine other applications are in the development stages; two-thirds of these focused on internal workflow and reporting.

One basic web-enabled application allows citizens to download forms from the Internet. After completion, these forms are either mailed to the appropriate agency or in some cases may be returned via fax. DOL provides web access to the full range of its forms, from address changes and driving abstract requests, to applications for professional licenses (for example, auctioneers and real estate brokers) and master business applications. The Washington State Library allows a

citizen to print out a library card application and then fax in the form, but the signed original must follow through the mail.

Taking this application a step further, other forms and applications can be completed online and submitted via the Internet. The information entered may then be recorded in a database and serve as the starting point for other steps in a workflow process. The Office of the Insurance Commissioner offers one such online form to request assistance with life, health, disability, property, or casualty insurance complaints.

The Washington State Liquor Control Board (WSLCB) has built a number of interactive forms into its sophisticated website. The heart of the site is a searchable database of alcohol server permits issued by the Board. This permit is required of every person whose job involves serving, mixing, or pouring alcohol. With a permit number or a person's last name and date of birth, an employer can verify the status of a permit. Another feature allows citizens to use a web form to "Report a Violator" by leaving anonymous complaints about possible violations including over service of liquor, the sale of liquor and/or tobacco to minors, or the sale of untaxed cigarettes. This website also offers a sophisticated example of combining the concept of "extranets"—internetworking between business partners—with interactive reporting capabilities. The WSLCB has transformed a burdensome but core element of its business by using web-based technologies and establishing a secure "extranet" with its suppliers.

Before developing its web-based system, the WSLCB maintained a staff of four whose full-time jobs were to read, respond to, and file paper forms regarding prices submitted by liquor suppliers from all over the country. By fall 1996, staff had difficulty meeting the legal requirement to review and approve all of these prices because of the large number of paper forms submitted each

month. Web-enablement provided a real solution to a real business problem. In November 1996, the WSLCB approved a recommendation to require all beer and wine manufacturers, importers, and wholesalers to electronically post their price catalogs. The WSLCB recognized that the Internet was uniquely suited to collect price information from suppliers that stretched across the country. By September 1997, the electronic price posting system was complete and in production, the first in the nation to use interactive Internet technology. This easy-to-use system has already proven its value to the agency and its suppliers. Suppliers are able to file any time, day or night, while the WSLCB is able to provide rapid notification of approval or rejection. Using a standard web browser, a supplier or distributor logs into the manufacturer and distributor price posting page with its license number and password and updates its price information as needed. Information transfers are kept confidential with secure socket layer (SSL) security technology and the respective parties are verified with digital certification provided by VeriSign, a private vendor.

In another example of web-based reporting, L&I began an initiative to provide selected employers with access to worker compensation claims information that had previously been restricted to agency personnel. The initiative, dubbed the "External Access Project," was completed in two phases. Employer access to basic claims procedure information became available in mid-1997 with extended claims procedures coming online a year later, along with an image index screen, an Internet access interface, and automated report distribution. This project made L&I the first state agency to offer additional direct, secure access to one of its databases via the Internet. To date, 52 external organizations, including private sector employers and eight state agencies, have on-demand, online access to the central claims.

**The Insurance Commissioner's assistance request form is available at www.wa.gov/ins/ complain/ LDFORM1.HTML**

**The Washington State Liquor Control Board's (WSLCB) "Report a Violator" form is available at http://liq. wa.gov/services/ violator.asp**

Government-to-business transactions are the focus of the License Information Management System (LIMS) at DOL. LIMS is a downloadable application that provides a single source of information. Based on the type of business to be conducted, where the business will be conducted, whether employees will be hired, and the ownership structure, LIMS generates a guide sheet listing the city, county, state, and/or federal organizations that need to be involved in licensing and registration.

Just a few clicks away, DOL's Excise Tax Calculation Application helps citizens and businesses to determine fees to license or renew their vehicles. With the entry of only minimal information about the vehicle, users can calculate excise tax for passenger vehicles, trucks, motorcycles, motor homes, campers, and travel trailers. This program is available to both buyers and sellers, putting accurate information in the hands of consumers and vehicle dealerships alike.

### E-Commerce

Electronic commerce is perhaps more accurately described as "digital commerce" that replaces slow, paper-intensive processes with lightning-fast, paperless transactions that have the full force of law. The shift of commerce from atoms to bits relies on a combination of structured messages such as Electronic Data Interchange, and unstructured messages such as e-mail, data, repositories, and database access, all flowing across the entire range of networking technologies. The sharing of information among business partners leads to cost savings, improved customer relations, and greater efficiency because of the integration of the transaction itself, inventory, pricing, and delivery.

For example, browse the online catalog at the Department of General Administration. Its Central Stores offers products such as office supplies, tools, first aid items, forms, janitorial supplies, and personal care items to state agencies, political subdivisions, and 501(c)(3) not-for-profit organizations in Washington. A buyer selects items to add to a virtual "shopping cart" and provides a customer identification code and password. A copy of the order is displayed on the screen and the buyer receives an e-mail confirmation indicating that the order is being processed. The system also gives the option of viewing the latest status of order submissions.

E-commerce has tremendous potential for expanding and expediting business, including international trade and economic development. Essential to the success of electronic commerce is the ability to authorize electronic transactions by "signing" them with legally binding digital signatures.

Washington is the first state to establish a voluntary program to license certification authorities for digital signatures. Under this program, the Secretary of State licenses private businesses to issue key pairs that allow individuals and organizations to digitally sign documents so that only intended recipients are able to decode information sent to them and also confirm that the information has not been altered. The licensing process ensures uniform standards so that entities doing business with certification authorities licensed in Washington can use digital signatures with confidence. Until recently, the only transactions that could be conducted electronically were those that did not require legally acceptable signatures. That changed when the Legislature enacted a digital signature law that created a way for e-mailed documents to be securely and legally "signed." Legally binding electronic signatures will change the way that public and private sector entities do business by removing time and distance impediments.

On June 30, 1998, Washington entered the stream of electronic commerce when it became the first state to receive a legally binding bid over the Internet: a company e-mailed a bid with a

legally authorized digital signature to the Department of General Administration. This was the culmination of a project that combined Internet access, digital signature technology and the state's new digital signature law. The manager of the paint company involved in the pilot, Matthew Haines of Paint Solutions, was happy with new program. "It saves time, [saves money], and it levels the playing field for small businesses." Coincidentally, Paint Solutions won the contract.[12]

Encryption, the scrambling of information contained in files, is another form of commerce cybersecurity. The contents of e-mail or other transmissions can be encrypted, as can the contents of databases or other files residing on machines. The amount of effort it takes for unauthorized parties to "break" or decode such files is proportionate to the strength of the mathematical algorithm used to scramble the file.

A few agencies reported using encryption, mostly for message transmission. WSP and WSLCB also incorporate encryption into their respective e-commerce transactions to protect log-in and credit card information. Ten other agencies have also recognized the need to protect information that is accessible online and are considering how they will use encryption in network applications.

DIS recently demonstrated the ability to securely process credit card transactions over the Internet. This means that citizens will be able to use credit cards to conduct business with the government via *Access Washington*—for example, to order a copy of a birth certificate or to obtain certain licenses—and avoid making trips to government offices during business hours. The Washington State Patrol was the first to deploy online credit card transactions on a production level system—parents, caregivers and employers can use their credit cards to pay for background checks though WSP's Washington Access to Criminal History (WATCH) website.

Perhaps the most sophisticated single application, in terms of integrating these emerging technologies into core business functions, hides behind the unassuming acronym "ELF." When the Department of Revenue launched the secure online Electronic Filing project (ELF), Washington became the first state to successfully test a system that lets businesses electronically calculate and file their state tax returns and then pay their taxes over the Internet using Electronic Funds Transfer. By allowing any business worldwide that had taxable business activity in Washington to file and pay taxes over the Internet, the ELF project saves time and money for state government and for businesses. The immediate benefits are reductions in filing errors, reduced tax return mailing costs, and fewer late filings. These benefits lead, in turn, to increased agency efficiency, delivery of an electronic return filing process customized for each business's reporting requirements, and improved communications with the business community.
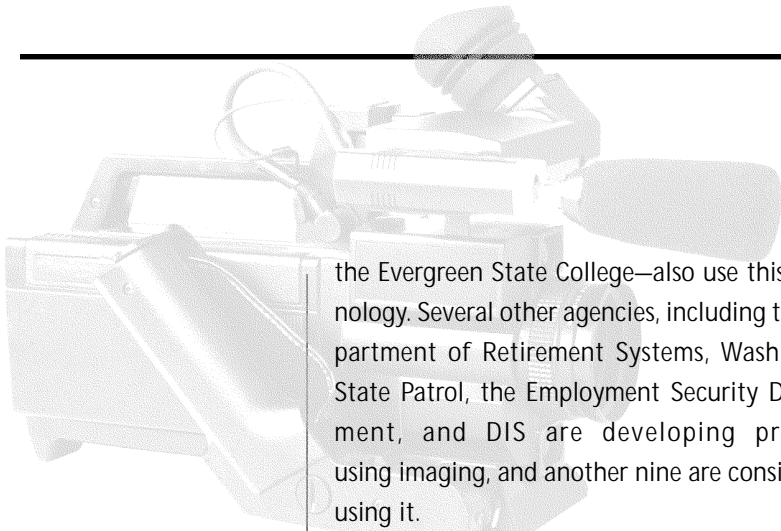
## Imaging

Imaging is the process of converting paper documents into a digital format. It has been used by a number of state agencies for several years. In some cases, imaging is used to archive records by moving information from paper onto other media such as disk, tape, or CD-ROM. Converting paper documents into a digital form can also serve as the first step to processing information through automated workflow systems. Six agencies—the Departments of Corrections, Labor & Industries, Licensing, and Natural Resources, the Office of the Administrator for the Courts, and the Utilities and Transportation Commission—along with three higher education institutions—the University of Washington, Eastern Washington University, and



**WATCH's website can be found at watch.wsp.wa.gov/ WATCHOPEN/ default.asp**

**ELF can be found on the web at www.wa.gov/dor/elf**

*[12] For more information about the digitally signed bid, see Benjamin Minnick, "State receives a bid over the Net: Firm's digital signature is now legally acceptable," Seattle Journal of Commerce, July 1, 1998: 1.*

the Evergreen State College—also use this technology. Several other agencies, including the Department of Retirement Systems, Washington State Patrol, the Employment Security Department, and DIS are developing projects using imaging, and another nine are considering using it.

The University of Washington (UW) offers a valuable case study. Recognizing the significant problems and costs associated with maintaining and sharing large collections of paper files, several UW departments considered imaging to improve services while reducing costs. Based on anticipated benefits, technical infrastructure, and management commitment, student loan files were chosen for the pilot application, called the Open Document Image Network (ODIN). Since users in multiple locations need access to these documents, the system had to conform to Internet standards instead of local area network, or LAN, standards. To support different desktop environments, including PCs and X terminals, ODIN relies on the platform independence of web browsers. No other client software is required. Document images are stored on disk, on the university's own high performance servers, while the index data is stored on a separate database server, making it possible to update the entire network by modifying only one part of the architecture.

ODIN was launched in May 1995 and went into production in July 1996. New documents were scanned upon receipt and old documents were converted within a year. All 19,000 student loan files, containing over 215,000 pages, were placed online. The hardware and software cost $55,500 and the project took 4,225 staff-hours, from approval through implementation and conversion of all historical files. UW reports increased productivity, recovered office space, better customer service, and greater job satisfaction. The measurable financial benefit is also clear: ODIN will pay for itself in less than four years.

## Videoconferencing

Videoconferencing is another well-established technology solution, currently used by ten agencies. It is also growing in popularity in education, thanks in large measure to the availability of high bandwidth connections on the K-20 network. The quality of desktop videoconferencing has improved sufficiently to be explored for some mainstream uses. Training, distance learning, and group meetings are the most common uses for video conferencing, although it has also been used for executive-level candidate interviews. DOC reports that it is considering video conferencing for inmate hearings, as well as for other administrative functions. DOH and DOT are investigating or establishing video conferencing facilities as well.

DIS Interactive Technologies created a video-conferencing bridging service to help open up the promise of videoconferencing beyond closed, proprietary systems. There are multiple videoconference systems on the market, just as there are several e-mail systems, and getting the systems and their networks to work together can be difficult, unreliable, and expensive. DIS Interactive's bridging service links the dedicated statewide network with the public switched network, making it easy and cost-effective to establish videoconferences with locations anywhere. This means that a meeting can be held among video facilities on a desktop in San Francisco, a conference room in Washington D.C., and a DIS Interactive facility in Spokane.

TeleCon, the world's largest trade organization representing teleconferencing, business television, distance learning, and telemedicine, named the DIS bridging service the "Most Significant Advance in Video Network Design or Service." DIS Interactive's innovation was selected over the work of other industry leaders such as RealNetworks (creator of RealAudio and RealVideo), MCI Communications, VideoServer, Inc., and RAD Data Communications.

# BUILDING THE DIGITAL STATE

The development and deployment of emerging technologies by state agencies represent the next generation of digital public service. They also represent the logical extension of the state's IT infrastructure and its attendant investment. This portion of the report examines the progress made toward the state strategic plan's goals and illustrates how state government is using digital technologies to streamline operations, improve services and service delivery, and increase citizen participation in the democratic process. At this point, we will shift our focus from reporting on technologies and projects to examining different areas of government service.

To that end, it useful to understand what the Progress and Freedom Foundation and the Government Performance Project examined in assessing Washington state's performance. Taken together, the categories included the use of technology in support of digital democracy, education, taxation, business regulation, social services, law enforcement, state finance, and human resources. The assessments also wanted to know how states managed information technology in general and the remediation of the Year 2000 date field problem in particular. Each of these 11 items will be discussed in turn.

## Digital Democracy

Getting involved in the democratic process used to require effort by citizens—going to the library to read copies of bills and court decisions, writing letters to officials, making trips to Olympia to attend legislative hearings and hear legal arguments. Consequently, only the most motivated and persistent participated in the process, thus limiting the number of voices heard in the public conversations and debates necessary to a healthy and vital democracy.

Citizens' interactions with their government are not always voluntary, though; at times, they are required to comply with government directives such as paying taxes or obtaining a permit. This sort of interaction with government more directly affects citizens' day-to-day lives and also requires effort by citizens—visiting offices during business hours, standing in lines, filling out forms. Making government information and services difficult to access causes frustration at best and anger at worst.

Washington uses a wide array of technologies to reshape citizen access to government, which led the Progress and Freedom Foundation to conclude, "Across the board, from making business forms available online to having a sophisticated search engine for sifting through state statutes and court decisions, Washington was doing the best job in using technology to make state government more customer-friendly and efficient."[13]

Washington's use of computer-based technology to provide citizen access started in 1994. With the possibilities of the Internet still a dream of the future, DIS initiated the Washington Information Network (WIN) interactive electronic kiosk system as the most effective means for increasing access to government information and services in communities statewide. More than 25 government agencies participated in WIN, which offered kiosk services in English and Spanish beyond normal business hours at touch-screen terminals placed at convenient public locations. WIN was particularly effective in rural areas. As of June 1998, the 48 kiosks had served users over one million times, made nearly 2,500 verified job placements, and helped return over $697,000 in unclaimed property.

Technologies advanced, and agencies found they could offer most of WIN's features over the Internet at far lower cost. As a result, DIS made

*Year 2000 Readiness Disclosure*

[13] *Progress and Freedom Foundation, The Digital State, 1997.*

the business decision to phase out the kiosk project in June 1998 in favor of more cost-effective technologies that build on the WIN project's public access legacy.

The Internet is the successor to the kiosks for providing public access to government. The state's original namesake website, *Home Page Washington,* was created and managed by DIS. It featured over 80 state government sites and received over 5 million hits per month by mid-1998. It offered citizens a convenient, affordable gateway to topics ranging from voting to jobs, winning lottery numbers to court decisions, reclamation of unclaimed property to live legislative proceedings, consumer fraud alerts to public comment polls, and factory siting opportunities to traffic reports. Reflecting the dynamic nature of the web, *Home Page Washington* morphed into *Access Washington* in fall 1998.

DIS launched *Access Washington* as the next generation of public access services and more: it is evolving into an interactive virtual business center that offers citizens and businesses convenient access to government services, information, and transactions over the Internet.

*Access Washington* is the state's public service web portal, providing interactive government services online to help meet the needs of the businesses and the people of Washington. Developed and managed by DIS, *Access Washington* rides on the state's advanced technology infrastructure and provides easy-to-use information and services 24 hours a day, seven days a week. Importantly, the design of *Access Washington* - graphics, colors, and navigation scheme - lends itself to easy use by a wide range of users, including the visually impaired. By early 1999, *Access Washington* was serving up 22 million environment hits each month.

Governor Locke, an advocate of high performance government, is providing executive leadership to ensure that Washington's use of

technology through initiatives such as *Access Washington* will improve the delivery of government services. The Governor's chief of staff and his executive policy advisor for science and technology have convened a cabinet-level subcommittee to provide a coordinated approach for online interaction with government. The departments of Ecology, Employment Security, Information Services, Labor & Industries, Licensing, and Revenue offer web-enabled applications through *Access Washington*, including permit assistance, job search assistance and information, labor market information, contractor registration inquiries, prevailing wage rates, license information, vehicle excise tax calculation, unclaimed property, electronic tax filing, and business records inquiries.

*Access Washington* will provide better online organization, coordination, and enhancement of government information and services. To that end, DIS is working with its partner agencies to develop the government-wide infrastructure needed to support electronic delivery of information and services. This shift to electronic delivery brings with it both technological and cultural changes. The long-term goal for *Access Washington* is to provide a common staging area for state agencies to electronically deliver information and services to transform the way government does business.

TVW, the non-partisan state-level public affairs network similar to C-SPAN, is another example of technology used to advance the democratic process. TVW takes the events and proceedings of the three branches of state government beyond Olympia via government access and cable channels, audio and video streaming on the Internet, and, pending federal approval, low-power FM radio broadcasts in Olympia.

TVW provides unedited live coverage of both Legislative committee meetings and floor debates as part of its coverage of government delibera-

tions and public policy events. TVW originates approximately 1,400 hours of programming each year from all three branches of government. It is broadcast on cable systems across the state and simulcast on the Internet. TVW distinguishes itself from the 19 other state C-SPAN television services by simultaneously streaming live audio and video from multiple hearings during session. After the live event, these audio and video files become part of the on-demand archives available through the TVW website for subsequent review and analysis.

TVW President Denny Heck told *Government Technology* magazine that the expanding role of web-based audio and video archiving is nothing short of historic. "Every oral argument before our state Supreme Court can be listened to - on demand - dating back almost three years. Every word spoken in every public meeting of the Legislature - this year's session and last - can be accessed with the click of a button. This is unprecedented in the history of democracy. People love it..."[14] In early 1999, TVW was nominated for the *RealNetworks Streamers Awards!*, which recognizes creators of sites that make new and imaginative use of audio and video streaming technologies.

Under an alliance with DIS, TVW increased the level of "live" public affairs programming available to citizens by at least 150 hours per year. DIS is providing new fiber optic connections to the East Capitol Campus in Olympia, expanding TVW's "live" reach beyond legislative facilities, the Supreme Court, and the Governor's conference room.

Another way in which technology is expanding citizen access to government is through the aptly named *Find-It! Washington*, a government information locator service that allows citizens to locate and access public records through the Internet. *Find-It!* is the result of a 1996 Legislative directive to the State Library, the State Ar-

chivist, and DIS to establish a pilot program for an electronic information locator system.

*Find-It!* staff, comprised of information specialists and technologists, tackled the Herculean task of librarianship involved in creating a framework for organizing hundreds of thousands of government documents. The Government Information Locator Service (GILS)[15] pilot project began in October 1, 1997, with some 88,000 selected resource descriptions and in its first year grew to include nearly 200,000 links to state and local government documents, web pages, and agency contacts. Developed and led by the State Library, *Find-It!* is the result of an intensively public-oriented approach that included the cooperation and support of over 500 individuals, entities such as DIS, the State Archivist, the state departments of Health, Licensing, Ecology, county and local governments, associations, and the private sector. In June 1998, a consortium of 17 state agencies, 21 cities, and nine counties launched the *Find-It!* website, which adapted the federal GILS model of government information locator services to the Internet. 79 public entities across the state now participate in *Find-It!*.

In addition to using technological innovations to migrate GILS to the web, Washington's approach takes the GILS concept farther by analyzing public priorities for information, actively seeking the source(s) of desired information, and working with state and local agencies to make desired information easily accessible to the public. Designed around "meta data"-data about data-embedded as tags in the web pages of a growing number of public entity sites, *Find-It!* enhances public access by making it easier for agencies to identify, index, and describe their information in standard ways for ease of public consumption.

*Find-It!* has been certified as an optimal site by BOBBY, an evaluation program run by the Center for Applied Special Technology that analyzes



***Find-It!
Washington***
is available at
http://find-
it.wa.gov or under
the "Search" link at
access.wa.gov

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[14] *Blake Harris, "Democracy on Demand: The Internet and TVW have your full-access pass to the legislative hearings and court proceedings of Washington State," Government Technology, Vol. 11. No. 6, June 1998: 42.*

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[15] *GILS is generally described as the processs of describing and indexing government information for ease and completeness of access.*

websites to ensure optimal accessibility for all citizens. The Washington model will be replicated in three other states - Oregon, Mississippi, and New Hampshire - under a $114,000 grant to the State Library from the Institute of Museum and Library Services. *Find-It!* was also identified as a case study of successful implementation of intergovernmental connectivity by the Ohio State University Electronic Commerce, Law and Policy Strategies Program and Supercomputer Center.[16]

*Find-It!*'s search and location abilities are an important complement to *Access Washington's* transactional ability. Indeed, *Access Washington* picks up where *Find-It!* leaves off, providing digital infrastructure components such as secure access and authentication and electronic commerce services so that citizens can act on the information they find and conduct business with their government with confidence.

## Education Tools for the Digital Age: Learning Through Technology

Washington did its homework before building the K-20 Educational Telecommunications Network, which interconnects over one million students and educators from kindergarten through graduate school ("K-20") and provides access to the Internet, video-based services, and "distance learning" capabilities. The completed K-20 Network will be among the nation's largest public telecommunication networks.

Driving the network is the shared vision of the K-12 community, higher education, the Legislature, the executive branch, and the private sector. Never have so many education interests set aside their own priorities to support a common purpose. The K-20 Network has knocked down barriers that have long stood in the way of a seamless education system.

Both public and private sectors collaborated on network development, and DIS is responsible for design and coordination. Overseeing the

project are the ISB and the 16-member Telecommunications Oversight and Policy Committee comprised of legislators, state agency executives, and educators.

Phase one was completed in September 1997, just 18 months after authorization and $700,000 under budget, for a total of $23.2 million. It provides more than 50 university and community college campuses and K-12 educational service districts with access to 21st century learning tools. In its first months, the network's video-based services delivered chemistry and Chinese language instruction and shared budget information among community college staff and 500 administrators. Internet use at connected sites soared beyond all expectations.

Phase two, now under way, connects all K-12 school districts along with the remaining higher education sites, bringing total site connections to more than 450. In 1998 the Legislature increased funding to a total of $61.4 million to ensure connectivity for all public school districts. Subsequent phases will add public libraries and other locations.

The network's cost-effective design, developed by a technical working group representing all the sectors, avoids many expenses of duplicative stand-alone networks. It builds upon the existing DIS statewide transport network and employs private sector telecommunications infrastructure. The state's position as a volume buyer of telecommunications goods and services keeps costs down.

The K-20 Network is, by design, infinitely scalable. It will grow and change as the Internet grows and changes. The UW, which helped build today's Internet, is now working on tomorrow's Internet. Work has begun on a site called the Seattle Gigapop on "Internet2" or "next generation Internet" that will establish a high-speed connection from the Pacific Northwest to the National Science Foundation's new research and education

network. The Seattle Gigapop will also provide Washington connection to a major component of Internet2 infrastructure, a networking partnership of research institutions and private sector technology providers. The network's span and flexibility help schools stretch limited resources to serve surging enrollments. Cost-effective technologies expand course offerings to students who might otherwise be left out. Students and educators in every community can share information, conduct research, and communicate without the traditional constraints of time, distance, and resources.

For a largely rural state such as Washington, the innovative video-based services multiply curriculum options for all students. For example, Marysville and Toppenish high school students can take a Spanish literature class based in Seattle, or Wenatchee middle school students can "tour" a London museum.

The K-20 Network can prepare students of all ages for the job market of the 21st century. Washington, home of the "Silicon Forest" of high-tech companies, already has a shortage of trained technical workers. Students can use the network to develop the skills necessary for finding and keeping jobs in a high-tech marketplace. Without leaving their communities, adults can pursue education throughout their lives and retrain for new jobs. Washington businesses will benefit from a workforce that is technologically savvy.

As originally envisioned by the Governor's Telecommunication Policy Coordination Task Force in 1996, the K-20 Network plays an important role in the state's economic development by creating an incentive for telecommunication providers to invest in rural areas. As the state meets those areas' educational needs through the network, businesses gain the benefits of associated private sector infrastructure investment. By making it possible for people to learn and work in rural ar-eas, the network increases the prospects for economic development.

## Taxation

Paying taxes is never pleasant but technology at least makes the process of filing tax returns less burdensome. Washington is the first state in the nation to offer a secure online program that allows businesses to electronically compute, file, and pay taxes. The business enters its tax identification number, then the program fills in information such as address and phone number. The program makes calculations using current rate tables and laws and then moves those calculations from one field to another, so the possibility of human error is eliminated. Payment is accomplished through EFT. This program, the Electronic Filing System (ELF), allows a business located anywhere in the world that had taxable business activity in Washington to file and pay its taxes over the Internet, saving time and money for the government as well for the business. Following a phased implementation, ELF system will be available to many of the 310,000 businesses required to file tax returns in Washington.

ELF is expected to reduce the 15-20 percent error rate in paper-format tax returns, reduce mailing costs, and result in fewer late filings. By design, the electronic return filing process is customized for each business's reporting requirements.

Equally importantly, ELF also gives business owners more time to spend on their most important task, that of running their businesses. ELF offers a simple interface, automatic computations, automatic error checking, a secure, encrypted environment and up-to-date online help. It also meets what business taxpayers characterized as the "32-10 rule," which holds that businesses are unlikely to use an electronic system unless it costs less than a 32-cent postage stamp and takes less than 10 minutes to use.

**ELF can be found on the web at www.wa.gov/dor/elf**

Many businesses have been so pleased with ELF that they have started filing tax returns monthly instead of quarterly, which smoothes out the workload at DOR. ELF also permits businesses to file returns when they have the time but to designate the electronic funds transfer to occur on another date, which further spreads out DOR's workload and also allows taxpayers to hold onto their cash as long as possible.

ELF was recognized by the state chapter of the American Society for Public Administration as the "outstanding singular innovation" in public administration in 1997.

DOR makes more than 2,000 of its tax-related forms and documents available through its website, which generates an average of over 300,000 transactions per month. DOR provides online access to two major databases for public use. The first enables real-time interrogation of, and application to, the business registration database. The second database allows the public to conduct real-time searches for unclaimed property, such as funds from dormant bank accounts and damage deposit refunds, in cases where the financial institution, landlord, or creditor has been unable to find the rightful owner.

To help citizens determine vehicle excise taxes, commonly called license tabs, the Department of Licensing has developed an online Excise Tax Calculator that estimates tab fees with the entry of only minimal information. Vehicle dealerships find the ability to calculate this tax particularly helpful.

## Business Regulations

Just as businesses have actively sought ways that technology can help them do their work more efficiently, Washington has also looked for ways that technology can help simplify and streamline its work with the business community.

*Access Washington* is the clearinghouse for information, including business regulations, from many state agencies. Many forms can be downloaded, such as those required for business, occupational, and recreational licenses, environmental permits, and government job applications. Once completed, some of these forms may be filed electronically, thereby eliminating papers, stamps, and long lines. *Access Washington* also offers general agency mailboxes through which citizens and businesses can get help or advice about complying with regulations.

In February 1998, DIS successfully demonstrated the ability to securely process credit card transactions over the Internet. Such transactions will make it easy for citizens to purchase birth certificate copies or some licenses. Plans are underway among DIS, the Office of Financial Management, and the Office of the State Treasurer to implement the web-enabled credit card infrastructure as part of *Access Washington*.

Washington's Electronic Authentication Act took effect on January 1, 1998. Under the Act, the state licenses private businesses as certification authorities to issue key pairs that permit individuals and organizations to digitally sign and verify documents. The licensing process sets the standard of trust, so organizations doing business with certification authorities licensed in Washington can confidently use digital signatures.

DIS and the Office of the Secretary of State collaborated to establish the licensing process. On March 2, 1998, Washington became the first state in the nation to implement a government-operated certification authority licensing service for digital signatures. Within the month, the state licensed a King County firm, ID Certify, as its first certification authority. In June 1998 Washington again blazed a trail by becoming the first state to receive a digitally signed, legally binding bid response over the Internet. DIS provided the technology for the infrastructure that made the licensing service possible and also helped define the licensing business requirements. DIS combined

The Excise Tax Calculator can be found at www.dol.wa.gov/excisetax

internal and vendor resources to install the Secretary of State's licensing system, which allows anyone with Internet access to view state-issued certification authority licenses. DIS took additional steps to satisfy statutory and industry requirements for a secure, trustworthy digital signature infrastructure.

Through the digital signature program and other electronic commerce initiatives, DIS is helping develop the technical, legal, and policy frameworks that will allow Washington businesses compete and prosper in a global economy. These frameworks will also allow state government to become more efficient and Washington residents to more easily access government services and information.

## Social Services

Social services agencies use information technology to handle the routine and free their employees to deal with individuals. For example, ESD's website is integrated with America's Job Bank and America's Talent Bank, which are, respectively, the nation's largest pool of available job postings and the nation's largest electronic resume system. This integration allows for comprehensive job searches. ESD also helped develop WILMA, Washington's Interactive Labor Market Access, a single-source job data system that provides information and statistics about the state's labor market for research purposes. WILMA also offers public access to non-confidential information.

DSHS has several divisions that added new IT systems. The child support division recently implemented an interactive voice response system that allows clients to obtain information regarding their debit balances and payments and also receive recorded information about program services, all without having to speak with office staff. More than 450,000 calls are being handled by this system each month.

Another recently implemented DSHS system is the Support Enforcement Management System, or SEMS. This federally certified system allows the agency to establish, collect, and distribute child support payments.

DSHS also replaced its outdated welfare check writing system, built in 1973, with the Automated Client Eligibility System, or ACES. ACES networks 3,300 computer terminals in numerous field offices with agency headquarters and automates the previously manual process used to determine eligibility and manage state-administered public assistance programs. It also authorizes or distributes $2 billion in assistance each year to over 600,000 people.

The Service Tracking and Reporting System (STARS) in the Vocational Rehabilitation Division replaces a 20 year old mainframe system and provides statewide access to program information. It also provides staff with shared files and allows for faster processing of vocational rehabilitation applications.

DOH's maternal and child health services program uses the Women and Infant Children Client Information Management System (WIC/CIMS) to coordinate health services resources for pregnant women, infants, and children. WIC/SIMS is used to screen newborns for certain disorders that may lead to disability or death and manage a preventative health program for young families.

Through DOH, Washington was one of 12 states chosen to participate in the Information Network for Public Health Officials (INPHO), a high-speed network that connects the state's 34 local public health jurisdictions and provides Internet access, e-mail services, and access to other public health information systems. INPHO allows local and state public health officials to report and coordinate responses to public health emergencies such as E. coli breakouts and communicable diseases and also to discuss policy and

legislative proposals. It also allows for the collection and assessment of health data, as well as communication with the Centers for Disease Control and Prevention and other health jurisdictions. INPHO gives public health officials the means to communicate simultaneously and immediately with peers, which is especially important with the increasing public expectation that "the government"-be it state or local-will promptly respond to public health emergencies and crises. This was difficult before INPHO because the multiple local health jurisdictions had to rely on phones and fax machines to communicate with each other and with DOH. INPHO also improves the public's access to public health services. For example, INPHO has made it easier to obtain copies of birth certificates, reducing customer visits from two to one and cutting turnaround time from up to one week in some jurisdictions to just fifteen minutes.

## Law Enforcement and the Courts

*Any justice practitioner in the state will have
complete, timely and accurate information
about any suspect or offender...
available in a single computer session
from automated statewide systems...*

*known as the Justice Information Network.*

**Mission Statement,
Justice Information Committee**

The Criminal Justice Information Act, Chapter 10.98 RCW, directed the state's criminal justice community to plan and deploy a standards-based, integrated, high speed, high bandwidth network to support law enforcement and criminal justice activities across the state. That network, the Justice Information Network (JIN), is an emerging system that helps ensure public safety statewide. When completed, JIN will provide an unbroken chain of information to every level of the justice system. Public safety increasingly relies on accu-

rate, timely, and secure information exchanges among state and local criminal justice agencies and law enforcement. JIN will increase public safety and system efficiency by quickly identifying dangerous offenders, providing complete criminal histories for trials, and enabling fast and accurate background checks. By employing new technologies, accountability will increase and offenders will be less likely to "slip through the cracks." DIS is coordinating the overall effort.

To make JIN a reality, representatives of often-competing interests have forged effective partnerships based on cooperation as well as on the actual needs of law enforcement agencies, prosecutors, and courts. JIN's planners face the formidable challenge of providing authorized local, state, and federal agencies with access to the once-discrete databases of the Department of Corrections, Department of Licensing, Washington State Patrol, Office of the Administrator for the Courts, and other entities. Moreover, the integrated network requires robust functionality to support the exchange of fingerprint, document and photo images. JIN's success also means developing data standards that are easily understood by all agencies, creating new systems that associate criminals to particular crimes, and designing a communication network that will provide timely, positive identification of suspects.

Riding as a key anchor tenant on the statewide digital IGN, JIN builds bridges between islands of data that currently exist throughout state and local governments. It creates tools that make this data available to authorized users where and when they are needed, without regard to traditional constraints of time, distance, and cost. JIN offers secure electronic information exchange that allows Washington law enforcement, courts, and corrections officers around the state to quickly obtain accurate criminal history information.

The Office of the Administrator for the Courts (OAC) is the first justice agency to move beyond proof-of-concept testing. It is currently engaged with DIS in a project that will move the data flow of the state's courts to JIN. As of February 1999, 103 courts are connected to JIN for access to OAC's internal Justice Information System. These courts represent 80-85 percent of the cases in this state. 38 of Washington's 39 counties now have dedicated point-to-point connections on JIN. WSP will also complete its dispatch center pilot project, and based upon its success, it is anticipated that local law enforcement will soon follow suit.

The criminal justice community is also using the Internet to put important public records within reach. OAC maintains a website, accessible through *Access Washington,* through which the slip opinions of the state Supreme Court and Courts of Appeals are available. Slip opinions are the published and unpublished decisions most recently handed down by a court, before they are bound into a book. WSP has developed the web-enabled Washington Access to Criminal History (WATCH) program for checking criminal histories. With a standard Internet browser and credit card, citizens and businesses can do background checks online, calling up information about arrests, detentions, indictments or other formal criminal charges, dispositions, and registration as a sex offender or kidnapper.

## State Finance

The Agency Financial Reporting System (AFRS) is a comprehensive automated central general ledger system used by agencies to make expenditures and track compliance with their budgets. It provides expenditure reports that are available to program managers on a daily, monthly, or other periodic basis as well as comparisons of actual to planned expenditures by month and to date for a fiscal period. Project Fastrack, part of AFRS, will

provide managers with financial data from AFRS in easy to use formats on CD-ROM and the Intranet. Finally, AFRS provides expenditure histories, which are used as the basis of the next budget process.

Many agencies use the Budget Preparation Systems (BPS1 and 2) to assist them in preparing information for their budget submittals. BPS1 helps agencies manage their personnel information and projects salaries and fringe benefits over a five-year period. BPS2 helps agencies prepare their biennial budgets.

The state is working on a new system, the Budget and Allotment Support System (BASS), which will allow agencies to track their performances against measures tied to their appropriated budgets. One part of BASS, the Performance Measure Tracking System (PMTS), has already been released. It allows agencies to enter and track performance measures. When completed, BASS will fully support the preparation and management of agencies' budgets.

AFRS, BPS1, BPS2, BASS, and PMTS are all used by agencies to feed information to the centralized client server operating and capital budget systems. The Governor and OFM use these centralized budget systems to make decisions that comport with the Governor's policy objectives and that move agencies toward their missions and goals. Other systems are used to project the financial effect of changes in educational enrollment and compensation rates for state employees and vendors. These systems also allow the state to project ongoing expenditures and revenues six to ten years into the future to assess the long term effects of current budget and policy decisions.

The Governor's budget proposals are electronically transferred to client server budget systems used by the Legislature. The executive and legislative branches use compatible budget development systems and data. As the Legislature works

OAC's website can be found at www.wa.gov/courts/ home.htm

WATCH's website can be found at watch.wsp.wa.gov/ WATCHOPEN/ default.asp

on its budgets, it electronically transfers its proposals to OFM so that budget comparisons can be made immediately upon the release of the Legislature's budget. The budget proposals of the Governor and the Legislature are also available to the public on the Internet.

The Office of the State Treasurer is replacing its legacy mainframe systems with the client-server based Treasury Management System (TMS). This new system, discussed above in the major projects section, will integrate the cash, warrant, investment, and debt management, accounting, revenue distribution, and fiscal strategy systems that are currently independent of each other. TMS will allow the Treasurer's office to continue the complex and important work of borrowing and investing on the state's behalf with a very small staff.

## Human Resources

The Department of Personnel developed a data warehouse to provide human resource data such as turnover rates and salaries to the Legislature, OFM, and other state agencies for policy and planning purposes. This information used to be difficult to get-only state agency human resources staff had access, from their desktop personal computers.

## Portfolio Management: Reshaping the Stewardship of a Vital Public Asset

In 1995, the Legislature's sunset review committee recommended that state IT resources be treated as investments. In the state's next supplemental budget, the Legislature directed that "Agency planning and decisions concerning information technology shall be made in the context of an information technology portfolio..."

Accordingly, the ISB directed agencies to adopt a portfolio management system for their IT resources.[17] Under this system, each agency's IT re-

sources—computers, computer systems, and telecommunications equipment—are managed as one would manage other investments, such as real estate or stocks.  Each proposed investment is examined in the context of that agency's current and planned investments as well as in the context of the state's overall IT holdings and the agency's business needs. This system, developed in consultation with agencies, senior legislative staff, and public entities with oversight responsibilities, will allow decision makers to gauge the effect and integration of proposed IT investments on both an agency's and the state's IT infrastructures.

Portfolio-based Information Technology Management and Oversight is a comprehensive framework for managing IT assets that uses investment principles to produce a higher success rate for agencies' individual projects. Agencies justify proposed projects on the basis of a sound business case and as a prudent investment of taxpayer funds. Agency executives consult with DIS on new projects before authorizing feasibility studies, and DIS reviews the project as part of the agency's overall IT portfolio. A number of criteria—cost, benefit, risk, readiness, severity, and impact on the statewide infrastructure—are used to evaluate proposed projects or investments.

Under the portfolio system, agency heads bring executive focus to their agencies' investments and the ISB engages in new projects earlier in the development process. An agency's clearly defined business needs drive the development and deployment of IT that will serve citizens and fulfill legislative mandates. Large projects are broken into smaller, more easily managed projects; each phase adds value on its own without committing funding authorities to subsequent phases.

Managing technology projects and acquisitions according to investment principles recognizes the value of Washington's IT infrastructure as a vital public asset. The portfolio approach pro-

[17] *Under statute, agency heads hold the primary responsibility for the management of information technology within their respective agencies, while the Information Services Board (ISB)-the 13-member policymaking body-is responsible for the coordination and stewardship of the statewide shared infrastructure. RCW 43.105.*

vides context for technology decisions by the ISB, state executives, state IT professionals, and, by extension, the Legislature.

DIS assigned senior technology management consultants to work with agencies, boards, and commissions on areas such as aligning technology decisions with the agency mission, project risk management, and compliance with legislative and ISB requirements. These senior management consultants serve as liaisons between the organization and the ISB to ensure the effective stewardship of taxpayer dollars. The DIS consultants also review portfolios for duplications of effort or infrastructure and for inconsistencies with the statewide direction.

As part of DIS' commitment to improving project success rates, DIS' director worked with other states' chief information officers to establish a consortium to ensure technical exchange, promote greater leveraging of state IT investments, and provide risk management and risk assessment assistance to states. This consortium operates as a technical arm of the National Association of State Information Resource Executives (NASIRE).

The national Government Performance Project found particular merit in the made-in-Washington model of portfolio management when awarding the state an "A"-the only one given—for its IT management. The project's report highlighted two key characteristics of the model, noting that "new investments must fit into the overall portfolio, not merely solve a single problem," and that "the state doesn't fund an information technology project for more than two years. For the big ones, it appropriates enough money to get phase one completed, and then demands results before moving on." The director of the Government Performance Project concluded that Washington has paid attention to the right things. "They're managing for results. In terms of information technology, they're extraordinary."

## Year 2000:  Preparing for the New Millennium

As the third millennium nears, an outmoded technology standard challenges businesses and governments worldwide to prepare computer systems for reliable operation past  2000. DIS is responsible for coordinating state government's efforts in this race against time.

The Year 2000 project is the largest, most complex management effort currently underway in state government. Year 2000 preparations must be managed with best practices and accountability and with effective allocation of limited funding and staffing resources. While the date change will not be problem-free, Washington's goal is to ensure no interruption of vital public services or loss of accountability of public resources when the millennium turns.

Individual agencies and higher education began addressing known conversion issues as early as 1993. DIS established a Year 2000 program in 1995 to serve as a clearinghouse for information, inventory critical applications and implement an independent risk assessment program. In 1997, Governor Locke chartered a steering committee of key agency officials to provide policy direction. In 1998, the Department of General Administration established a companion Year 2000 program to focus on date-sensitive embedded chips in state equipment.

To save time and taxpayer dollars, DIS negotiated more than 40 umbrella contracts for agencies' Year 2000 programming, testing, project management, quality assurance, and configuration management. Washington's information-rich Year 2000 website serves up tens of thousands of page views a month from business and government information technology professionals and policymakers around the world. DIS managers are regularly invited to speak regionally and nationally on Year 2000 issues.



**Washington's Year 2000 website can be found at www.wa.gov/dis/ 2000**

*Year 2000 Readiness Disclosure*

Washington is the only state known to have conducted a major Year 2000 outside risk assessment to assure objectivity. This risk assessment is the key element of the Year 2000 work plan developed by DIS. Through a competitive process, DIS contracted with consultants in mid-1997 to assess state agencies' readiness for the date change. The assessment identifies potential disruptions to vital public services, recommends mitigation actions, and applies a set of best practices benchmarks across the board to agencies and projects. Governor Locke required all executive cabinet agencies to participate in the audit and invited the participation of higher education and independently elected officials' agencies.

Year 2000 testing is expected to consume over 60 percent of conversion time and effort. When the success of a state conversion depends upon the Year 2000 compliance of other governments or businesses, the consultants recommend alternatives such as constructing firewalls to protect state data sources. If a system cannot be converted on time, the assessment program ensures that contingency plans are in place.

The assessment also ensures that resources are allocated where they are needed most. The Legislature allocated $83 million—13 percent of the state's annual IT dollars—to agencies' Year 2000 efforts through 1999.Agencies also absorbed as many costs as possible, a total of $14 million.

Because the risk assessment found inadequate funding to be a common problem among projects identified as high risk, the Legislature set aside over $30 million of the $83 million in a contingency fund. OFM allocates those resources where they are needed most.

The Year 2000 remediation effort also presents a rare opportunity for promoting efficiency and, ultimately, saving money. Washington is taking a best practices approach to the Year 2000 problem. It is coordinating the date conversion process from a statewide perspective while identifying opportunities to share resources and lessons learned. The state is also using the Year 2000 effort as an opportunity to eliminate redundant or unnecessary systems and data, which will increase efficiency and save taxpayers money.

# EXTENDING THE VALUE OF THE STATE'S TECHNOLOGY INVESTMENT[18]

The Year 2000 system conversion effort represents the largest, most ambitious system infrastructure upgrade in the state's history. It is consuming the systems development focus of every major state agency. Not only will this effort cost tens of millions in state dollars, it is also creating a hidden future cost. In order to meet the aggressive schedule set for the conversions, most agencies have had to forego other policy and systems initiatives. Many agencies have also had to create moratoria on modifications to their systems to keep them stable during the conversions.

Fixing the Year 2000 problem will do nothing more than extend the status quo capabilities of the systems subject to remediation. No new features, report generating, or decision support capabilities are included in the Year 2000 remediation efforts. But business needs continue to change, new laws get passed which cause system requirements to change, and system users continue to expect more functionality with easy access to their data. These issues are creating a building backlog of system maintenance requests and a pent-up demand for new system capabilities. While this has been painful for many agencies, it has also created tremendous opportunities in its wake. The Year 2000 project presents a unique opportunity for state government to take a critical look at its systems to improve the ones that are necessary and to eliminate those that are not. In many instances, agencies are deciding to "decommission" systems that are not worthy of remediation. In other instances, agencies are learning that some of the data, reports, and interfaces they have been supporting are no longer used and are therefore eliminating them.

The Year 2000 project also gives state government the opportunity to re-examine the data it keeps on individuals. Data warehousing has been used as a means to extend the value of mainframe data. A new industry white paper prepared by noted data warehousing experts and reported by *Computing Canada* indicates that the "majority of enterprise-wide data warehouse projects have failed and deliver little or no business value." The paper indicates that many organizations have turned to smaller-scale data marts to make better use of their operational data more effectively and backed away from enterprise-scale projects that have a failure rate of almost 70 percent.

Several state data warehousing projects will become scaled down "data marts" so that data made available to users are relevant and useful. Some agencies are also finding that data warehousing gives them insight into the quality of data collected in their mainframe systems. For instance, when CAMIS data were loaded into the warehouse, it was discovered that many records were incomplete or contained erroneous data. Such discoveries will create opportunities for agencies to re-examine data requirements and internal controls to ensure the quality and usefulness of data captured in mainframe systems.

It goes without saying that the Internet is also creating new demands for access to mainframe data. As *Government Technology* points out, "Internet access to legacy data—specifically via the World Wide Web—is hot these days for several reasons: Users like the friendly Web browser interface; information system managers like the fact that Web access leaves the legacy systems relatively untouched; and the cost of developing Web access is also lower that rewriting a legacy system."[19]

The tools for providing web access to mainframes are still new and evolving. By the time state agencies complete their Year 2000 conversion projects, these tools will likely be sufficiently mature to enable wider access to legacy data by

*Year 2000 Readiness Disclosure*

[18] *This section is drawn from the DIS-commissioned report by Sterling Associates, "Extending the State's Investment in Information Technology: A White Paper on State Computing Trends," February 1998.*

[19] *"The Nine Lives of Legacy Data," Government Technology, January 1998, v11, n1, p. 56(1).*

other government agencies as well as by the public.

In the early 1990s, the line between mainframe-based and client server-based architectures were quite clearly drawn. However, those lines have become increasingly blurred in recent years as new technologies such as low-cost CMOS and RAID become more available and operating systems such as Windows NT are scaled to handle enterprise-wide needs. In the not too distant future, there is a reasonable expectation that mainframes will become servers, while servers will become as powerful as mainframes.

This trend will allow state agencies to further extend and blend their hybrid architectures to provide highly cost-effective services.

For much of the last decade, several state agencies have sought various benefits promised by client server technology. First, many agencies wanted to improve the productivity of end-users by giving them a graphical user interface to their systems. Second, agencies also wanted to improve access to the data contained in their systems by using relational database technologies and more intuitive data query languages and tools. Third, recognizing the growing reliance upon these systems, they wanted to find ways to reduce their mainframe computing costs by moving to lower cost computing platforms. And fourth, in order to empower end-users and to have greater control over their computing resources, they wanted greater autonomy and ownership of those resources that had become central to their business operations.

While some agencies realized some of these benefits, others discovered that not all client server technology promises could be delivered without considerable risk and cost. As a result, some agencies have decided to follow a "best of breed" strategy instead of abandoning investments in mainframe systems and relying exclusively on client server technology. This strategy

focuses on taking advantage of the best offered by mainframe systems by coupling them with tools that improve the quality of the user interface and by extracting the data from mainframe systems and putting them into more accessible data warehouses. This "hybrid" strategy has become popular among a number of agencies including OFM, DSHS, DOP, and GA.

The state's approach to making IT investments to meet the needs of the public has been prudent and sound. Indeed, Washington has made a considerable investment and reinvestment in its IT infrastructure and capabilities. Among these has been the purposeful evolution of mainframe systems to meet agencies' needs. The white paper by Sterling Associates traces some of the trends in this investment continuum. To further extend the state's investment in mainframe systems, several more actions are needed.

One possible action is to map out a statewide architectural design and migration strategy. Each state agency has unique missions, goals, objectives, and operations, so there can be no "one-size-fits-all" information systems architecture. Accordingly, each agency needs to design its strategic architecture in a way that takes advantage of prior investments while at the same time introduce newer technologies to address changing needs. A long-term migration and investment plan should also be developed to guide the introduction of new information services in a modular and risk-contained manner.

Another course of action is to take steps to make sure that systems are current and relevant to agencies' business needs. Like any other business asset, information systems need to be maintained. The notion of paying for a system only once is outdated. The reality is that proper information systems maintenance requires continuous investment in hardware, software, network infrastructure, and people. Accordingly, a continuous investment strategy is required lest sys-

tem becomes irrelevant or worse, a liability that forces its agency to scrap its investment and look for a completely different—and frequently costly and risky—alternative. That is simply bad business.

A third possible course of action is to re-think budgeting techniques to better reflect the nature of software investments. Both public and private organizations must be able to justify and fund IT investments both in the short and long terms. Most organizations, including the state, evaluate systems investments using capital budgeting tools and disciplines. These techniques are effective when an investment is capitalized, amortized, and depreciated over the life of the investment, thereby spreading the costs over future periods that benefit from the investment. These techniques fail, however, when organizations do not capitalize and depreciate the investment and instead expense them in the current period. For example, government agencies rarely capitalize their software investments. This not only causes tremendous "sticker shock" in the short term by causing many sound long term investments to not be pursued, but it also places high one-time system development costs into disadvantaged competition with other operating budget needs.

Instead, a cost-per-unit-of-service model should be considered for evaluating systems investment decisions. A good example of this model is found in the outsourcing world. When DSHS decided to outsource its EBT service to the private sector, it looked at the cost per case month from competing vendors. This not only helped DSHS evaluate alternatives, but it also provided a clear relationship between the cost of the service and the benefit it provides.

This model also shifts the discussion away from the cost of systems to the cost of providing a service to the public. As Lyle Quasim, Secretary of DSHS, said, "Let's put the focus on the subject, not the object." The focus on the cost of systems

projects should be redirected to the cost of providing a unit of service to the public. This approach would help the Legislature and OFM evaluate costs and benefits in terms public program objectives. It also follows the general direction of the state in linking performance more closely with budget decisions. This approach could also lead to innovative financing techniques as well.

But how valuable is information by itself? Is the right information being collected? Is it appropriate? Useful? Secure? Is it worth the continued investment to collect, process, store, retrieve, and analyze? Continued investment in the state's information systems may hinge on the answers to these questions.

Much can be done to streamline the amount and quality of data collected by the state. Also, much could be done to educate users on the meaning of the basic data recycled from mainframe systems into data warehouses. This is not a technology issue as much as a management challenge to how to make the best use of the data itself and to interpret what it really means.

Moreover, pressures from the public, the Governor, and the Legislature are forcing state agencies to seriously examine the amount and type of data collected about individuals. Systems that collect additional data on citizens or that do not provide sufficient safeguards to protect confidential information will likely not receive much support.

# FUTURE WATCH:
# ISSUES FOR THE NEXT BIENNIUM

The safeguarding of personally identifiable information is vital to effective and trustworthy digital governance. There is no single one-time solution to complex privacy issues. It is a continuous process that necessarily involves policy, operations, technology, and the decisions of citizens themselves.

There are significant intersections between personal privacy and technological security but they are different disciplines. Web-enabled service delivery, including but not limited to e-commerce, involves using and accessing the state's core information infrastructure in ways not anticipated just a few short years ago. The shared use of the infrastructure creates a shared interest in - and responsibility for - its security. Here again, policy, operations, and sophisticated technologies play roles in keeping the infrastructure secure in an increasingly hostile world.

Many of the issues identified in "Becoming Digital" and revisited at the beginning of this report remain important to the continuing stewardship of a vital public resource. However, there is an important coming shift in the use of the state IT infrastructure.

Digital technologies, particularly Internet technologies, have begun to catch up with the long standing vision of transforming public service. To realize this transformational potential, however, it is necessary to expand our view of a shared infrastructure. It is not just the network anymore.

Successful transformation will rely on a common approach to digital transactions across the state - citizen to government, business to government, and government to government. A common approach avoids the complications of developing multiple interfaces to the state's financial systems and allows the state to aggregate demand for transaction processing. The window of opportunity for adopting a common approach will close with the end of the century. The Year 2000 remediation effort has created pent up demand for new applications or enhancements to existing systems. There is a reasonable expectation that agencies will begin work on new initiatives as they emerge from the date change conversion. Futurist George Gilder has observed that the Year 2000 is the last gasp of old technologies and the first breath of new technologies. The state must act upon the shared interest in developing a common approach to digital transactions before new applications draw their first breaths.

The coming transformation will build on existing investments, but the next generation of computer applications will nonetheless be disruptive to the way government does business and delivers services. Digital technologies stand in stark opposition to justifications that begin with, "That's the way we've always done it." The challenge is to take a hard, honest look at government's internal operations and then surrender the familiar and the comfortable to take our place at the right side of history.

Washington State government has demonstrated the character and judgment to lead in a world running on Internet time. *Government Technology* magazine's recent supplement on e-commerce observed, "If it hasn't been tried in Washington, maybe it can't be done." That is the spirit that should continue to drive us.

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"If it hasn't been tried in Washington,

maybe it can't be done."
*Government Technology*

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# CONCLUSION: ADVANCING THE DIGITAL STATE

State government is at what Intel founder Andy Grove calls a strategic inflection point, "a change so powerful that it fundamentally alters the way business is done."[20] The state's approach to the development and use of IT will determine whether government reaches new heights or fails to keep pace in meeting the needs and expectations of its citizens.

This report builds on a growing body of work intended to help decision makers understand how best to extend the state's investment in information technology. State agencies' experiences in implementing essential information systems point to a hopeful trend: the growing use of a "best of breed" strategy. Indeed, agencies have begun to use once-discrete computing platforms in combination with others, each playing to its unique strengths, to provide the best solution to underlying business problems. This hybrid approach also furthers portfolio management's goals by linking each platform and application—mainframe, web, e-commerce, and everything in between—back to the agency's business.

However, the experiences here and elsewhere amply illustrate that the hottest trends and latest buzz words—client server, data warehouse, or reengineering—are, by themselves, rarely perfectly suited to the challenges that face the public sector. The search for a technological Holy Grail is ultimately fruitless.

Instead, we as a state must return to fundamentals—our mission, our service delivery requirements, our installed base, and our people—and rely on lessons hard learned. In some cases, there is great promise in extending existing systems to meet future demands. In other cases, a fresh start and new technologies may be called for. In most cases, the issues are complex and the decisions difficult. They must be approached thoughtfully, deliberately, and purposefully. We cannot simply follow the siren song of the next great technology quest.

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[20] *Andrew S. Grove, Only the Paranoid Survive: How to Exploit the Crisis Points That Challenge Every Company and Career, New York: Doubleday, 1996: pp. 3-5.*

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# APPENDIX A:
# AGENCY RESPONDENTS

The information in this report reflects the submissions of the following organizations. DIS thanks and acknowledges the work of their respective IT managers and personnel in compiling the 1999 performance report.

*Center for Information Services*
 Victor Albino
 Jerry Woodard
*Central Washington University*
 Norman Imamshah
*Department of Agriculture*
 Herb Potter
*Department of Community,*
*Trade and Economic Development*
 Mike Seale
*Department of Corrections*
 Don Price
 Mike Gray
*Department of Ecology*
 Jim Griffith
 Bob Monn
*Department of Financial Institutions*
 Tom Parma
*Department of Fish & Wildlife*
 Mary Ellen Bradley
 Jim Eby
 Dick O'Connor
 Shandi Schwegler
 Dick Stone
 Peter Sweet
*Department of General Administration*
 Phil Grigg
 Keith Kawamura
*Department of Health*
 Fran Muskoff
*Department of Information Services*
 Ron Carignan
 Mike Marshall
 Chuck Smith
*Department of Labor and Industries*
 Shelagh Taylor
 Joe Raudebaugh

*Department of Licensing*
 Tom Brewer
 Norwin Burbidge
 Denise Carr
 Sue Gordon
 Jeff Johnson
 Warren Linduf
*Department of Natural Resources*
 Al Bloomberg
 Pete Thomas
*Department of Personnel*
 Gary Maciejewski
 Doug Tanabe
*Department of Retirement Systems*
 Jim Reitz
 Jim Stanton
*Department of Revenue*
 Roger Dodd
 Niela Goyette
*Department of Services for the Blind*
 Fay Bronson
*Department of Social and Health Services*
 Judy Schneider
 Jeanette Sevedge-App
*Department of Transportation*
 Kathy May
 Sarah Schroder
 Curt Secker
*Department of Veterans Affairs*
 Brad Babayan
*Eastern Washington University*
 Alex Cameron
 Jane Johnson
 Wayne Praeder
 Neil Zimmerman

*Employment Security Department*
Thomas Bynum
Larry Colbert
Willis Daniels
Judy Eliasson
Richard Hochhalter
Chris Lattin
Scott Longnecker
Thiru Rasiah

*The Evergreen State College*
Anna Kircher

*Higher Education Coordinating Board*
Tom Board
Linda Schactler

*Industrial Insurance Appeals Board*
Dan Lipp

*Interagency Committee for Outdoor Recreation*
Dean Luedtke
Thelma Smith

*Liquor Control Board*
Craig Wilson
Teresa Bernsten
Mike Donaldson
Tony Jones
Megan Rondeau
Gary Thompson
Tom Westfall
Kathy Wilson

*Military Department*
Dick Casey
Jimmy Hocutt
Vicki Fraga
Dan Lipp

*Office of the Attorney General*
Jim Albert

*Office of Financial Management*
Bob Griesel
Dennis Jones

*Office of the Insurance Commissioner*
Ted Masumoto
Patrick Shea

*Office of the Secretary of State*
Patty Prouty
Donald Whiting

*Office of the State Auditor*
Chuck Pfeil
Susan K. Smith

*Office of the State Treasurer*
Marla Kentfield

*Office of the Superintendent of Public Instruction*
Ed Strozyk

*Parks and Recreation Commission*
Art Brown

*Public Printer*
Mike Cole
Sharie McCafferty

*State Gambling Commission*
Loren Husted

*State Health Care Authority*
Tom Neitzel

*State Investment Board*
Gary Harris
Jim Lee

*University of Washington*
Ron Johnson
Ed Lightfoot

*Utilities and Transportation Commission*
Mike Kretzler

*Washington State Library*
Pete Leonard
Tom Martin

*Washington State Lottery*
Jim Jensen

*Washington State Patrol*
Dan Parsons
Mary Lee Kisor

*Washington State University*
Mary Doyle

*Names were curent when data was collected in mid-1998.*

# APPENDIX B:
# PERFORMANCE REPORT SURVEY FORM

Agency No. _____

Agency Name_____

Prime IT Contact_____

Phone _____

Web Site_____E-mail_____

## IT OVERHEAD PER FTE

Please estimate the average IT-related over head costs for a single FTE in the agency:

Goods                                    _____

Services (Annual Costs)        _____

Hardware                             _____

Software                              _____

Telephone*                          _____

 Network                             _____

Connectivity                        _____

LAN Support/ Maintenance   _____

* Excluding long distance charges.

### 1995-1997 Biennium (Actual)

$_____

$_____

$_____

$_____

$_____

### 1997-1999 Biennium (Projected)

$_____

$_____

$_____

$_____

$_____

## IT PERSONNEL INFORMATION

Please provide the following information about IT staffing and related expenditures.

Total Agency                       _____

IT FTEs                                _____

Salaries & Benefits (Fully loaded)_____

Personal Service Contracts (Total)_____

Purchased Services              _____

Professional Development     _____

1995-1997 Biennium (Actual)   _____

1997-1999Biennium (Projected)  _____

What was the turnover rate for IT personnel at the agency for the 1995-1997 biennium? ___ %

## EXPERIENCE LEVELS OF IT PERSONNEL

Report as a percentage of total IT personnel.

0-2 Years                 _____%

3-10 Years               _____%

11-20 Years             _____%

21-30 years             _____%

31 or more years      _____%

What percentage of the agency's IT personnel will be eligible for retirement in the next 24 months?___%

## THE AGENCY WIDE PERSPECTIVE

This section requests brief narratives that reflect the agency wide perspective in each of three areas. At its discretion, the agency may choose to document more than one project or process to illustrate its response in each area.  Agency IT organizations may also want to complete their responses in conjunction with their respective agency communication offices. Please provide responses on separate sheets - or through the online forms provided through the Web-enabled reporting application.

## CASE STUDY

Please identify and describe a case study that exemplifies: (a) the agency's performance relating to information technology; and (b) the progress made toward implementing the agency strategic IT plan (RCW 43.105.170).

PUBLIC ACCESS

Please describe the agency's "progress toward [providing] electronic access to public information and enabling citizens to have two-way interaction for obtaining information and services" (RCW 43.105.270).

INNOVATION

Innovation often takes place at the periphery and outside of public view. That's especially true in the IT community when the people who know agency systems best come up with subtle (and not so subtle) changes to improve performance. The 1995-1997 Performance Report intends to capture this dimension of the public sector IT community's activities. Please provide a brief description of such innovation in the agency.

COMMENTS AND EXPLANATIONS

A number of agencies have requested the opportunity to provide explanation about how certain figures were calculated, or the assumptions behind them. Agencies should feel free to include any other information here that they believe would provide useful context to the information provided above.

RESOURCES ( Report total number)

FTEs_____

PCs_____

RATIOS (Report as a ratio)

PC:_____ FTE:_____

Internet Access:_____ FTE:_____

Phones:_____ FTE:_____

Cellular:_____ FTE:_____

Pager:_____ FTE:_____

DVC*:_____FTE: _____

*Desktop videoconferencing

VC:_____FTE:_____

(Other agency videoconference facilities)

DESKTOP (Report as % of total)

CPU_____ %

NETWORK PROTOCOL

| Pentium II _____ | TCP/IP | Other* |
| 586/Pentium_____ | TCP/IP | Other* |
| 486 _____ | TCP/IP | Other* |
| 386 or below _____ | TCP/IP | Other* |
| Other*_____ | TCP/IP | Other* |
| Other*_____ | TCP/IP | Other* |

Dominant commercial software applications (%)*

Word Processing_____

Other* _____

E-Mail_____

Other*_____

Calendars/Scheduling_____

Other* _____

Spreadsheet_____

Other*_____

Presentations_____

Other*_____

* Indicate name and %


AGENCY SYSTEMS & APPLICATIONS USED
AND/OR SUPPORTED BY BUSINESS UNIT
(Report system and application names as used
in the Year 2000 compliance effort)

1._____

2._____

3._____

4._____

5._____

In the space below, please provide the system
name, contact name, contact phone number
and contact e-mail for any significant system
not already reported to the Year 2000 program
office.


IT SPENDING

System Name _____

Contact Name_____

Phone _____E-mail_____


PC Purchase

System Name _____

Contact Name_____

Phone _____E-mail_____


PC Lease

System Name _____

Contact Name_____

Phone _____E-mail_____


Hardware Purchase

System Name _____

Contact Name_____

Phone_____E-mail_____


Hardware Lease

System Name _____

Contact Name_____

Phone _____E-mail_____


Repairs and Maintenance
1995-1997 Biennium (Actual)

$_____

$_____

$_____

$_____

$_____


1997-1999 Biennium (Projected)

$_____

$_____

$_____

$_____

$_____


Software Purchase*          $_____

Software Lease*             $_____

Software Maintenance*    $_____

Telecommunication Services $_____

Data Processing Services $_____

 * Excluding development efforts currently subject
to oversight.


1995-1997 Biennium (Actual)

$_____

$_____

$_____

$_____

$_____


1997-1999 Biennium (Projected)

$_____

$_____

$_____

$_____

$_____

End User IT Training**

1995-1997 Biennium (Actual)

$_____

1997-1999 Biennium (Projected)

$_____

** Excluding professional development of designated IT staff.

_____

EMERGING TECHNOLOGIES

Please provide a cursory overview of emerging technologies under consideration, under development or deployed by the business unit.

| *Under Consideration* | *Under Development* | *Deployed* |
|---|---|---|
| Platform | | |
| Yes __No __ | Yes __No __ | Yes __No __ |
| Business Purpose | | |
| Web-enabled reporting applications | | |
| Yes __No __ | Yes __No __ | Yes __No __ |
| Video Conferencing | | |
| Yes __No __ | Yes __No __ | Yes __No __ |
| Digital Signatures | | |
| Yes __No __ | Yes __No __ | Yes __No __ |
| Electronic Commerce | | |
| Yes __No __ | Yes __No __ | Yes __No __ |
| Encryption | | |
| Yes __No __ | Yes __No __ | Yes __No __ |
| Imaging/ Document Management | | |
| Yes __No __ | Yes __No __ | Yes __No __ |